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PRESENT STATUS OF THE TRIBE MAYETINI IN THE UNITED STATES

Part I (Excluding California)

(Coleoptera: Pselaphidae)

ROBERT O. SCHUSTER[1], GORDON A. MARSH[2] AND ORLANDO PARK[3]

INTRODUCTION

The tribe Mayetini was transferred by Park (1947) from the family Staphylinidae to the family Pselaphidae. The genus *Mayetia* was included in keys to the North American Pselaphidae in 1951 and 1953 based on undescribed material (Park 1951, 1953). In 1955, Jeannel and Coiffait published a paper placing the tribe Mayetini in the subfamily Faroninae of the Pselaphidae and Coiffait (1955) revised the European species of *Mayetia*. The revision and one subsequent paper by Coiffait considered a total of 38 species of *Mayetia* occurring in countries bordering the Mediterranean Sea.

Prior to any of the above mentioned papers, Dr. ~~Robert~~ John R Bowman defined a species, "*Mayetia chapini*", in the appendix of a manuscript entitled "Classification of Coleoptera". About 20 manuscript copies of this work were given on request to coleopterists. Although the work was never published, the "type series" was deposited in the USNM. The unpublished work of Bowman was not sufficient to consider "*M. chapini*" as a valid species and his material, with his consent, is reconsidered in this paper.

Specimens of *Mayetia* collected in the United States date back to 1935. Until 1957, less than 100 specimens were available for study. Although *Mayetia* are not common in collections, they occur in moderate numbers at some localities and may be equally abundant in other areas where they are to be found. On the basis of the few collections thus far examined, it seems reasonable to predict that in due time the species of North American *Mayetia* as well as the number of specimens available for study should be augmented greatly.

Adults are represented for all the seasons by composite

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collections from various sections of the United States. Nothing is known of the larval forms or of the habits of the adults.

Specimens of *Mayetia* have been recovered from such diverse habitats as prairie soil, pine or oak situations, sphagnum moss, and peach orchards. An attempt to correlate the distribution of *Mayetia* with vegetation or soil types would be premature at this time although most of the collection records point to their preference for sandy soils. A possible historical factor influencing the distribution of *Mayetia* in the eastern United States may have been the Wisconsin Glaciation. Further collection is needed to substantiate the proposition that *Mayetia* occur only south of perifery of that ice sheet.

Collection and Preparation

A suitable method of collection and preservation is given below in hopes that our experience may prove helpful and increase interest in collecting these soil-inhabiting insects.

Mineral soil immediately below any organic debris was collected in the field, placed in multi-layered paper sacks and later processed into 95% ethanol by modified Berlese funnel in the laboratory. Due to the small particle size of the soil, the combination of a mesh of window screen and a grid (Newell, 1955) proved insufficient to maintain debris-free samples. The addition of a single layer of cheese cloth placed on the screen eliminated most of the sand without impeding the recovery of *Mayetia*. A volume of soil 4 inches deep and 16 inches square was processed from 8 to 12 hours using a 100 watt light bulb as the heat source. Specimens of *Mayetia* were recovered from the sample bottles by pouring the contents into petri dishes and examining under a dissecting microscope.

The specimens clear easily in a warm solution of 1 part super-saturated Merk phenol and 3 parts 85% lactic acid. The majority of our specimens have been mounted in Hoyer's medium after removal of the lactophenol by placing the beetles for a time in water. Specimens may be dehydrated and mounted in diaphane or Canada balsam but caution must be exercised or distortion of the extremities may result.

Stender dishes provide adequate containers for the solutions in which specimens are processed. An insect pin with the end flattened at a 60 degree angle to the shaft makes an excellent scoop for handling these small beetles.

One method for removing the genital structure is preferred. The cleared specimen is placed on a slide in a drop of Hoyer's. Either substaged lighting or a white-surfaced stage with adequate top lighting and a magnification of about 60X is required. Two sharp minuten pins in handles are used to open the ultimate segment and remove the genital structure. This is then transferred to a drop of Hoyer's on a clean slide, the genital segments removed and 15 mm. round cover slip applied. Slight pressure at this time will position the aedeagus as desired. The remainder of the insect is mounted on the same slide obviating any chance of losing either part.

Taxonomy

European species of *Mayetia* in the Bernhauer Collection at the Chicago Natural History Museum were compared with our American species and found to be congeneric. The type of the genus, *Mayetia sphaerifera* Mulsant and Ray is in closest agreement with species occurring in the eastern part of the United States, and all of our species fall within the range of variability occurring in European species.

Some of the characters that help to separate the American species are variable within certain populations and must therefore be used with caution. Others, usually degrees of development of a structure, will adequately separate species.

The presence and degree of foveation, while extensively used in the discrimination of pselaphid genera, varies in *Mayetia*. Foveae are more pronounced in eastern populations, but elytral foveae are frequently developed only on one elytron of a given individual and are occasionally completely absent.

The most reliable characters of the head appear to be the maxillary palpi and the mentum. When gross sense organs are present on the maxillary palpi, segment 3 bears a large lateral development and segment 4 bears a similar development on the basal-lateral margin. Two, or occasionally three, sensory setae of various configuration occur on the anterior-lateral margin of the fourth segment as well as a terminal palpal cone (fifth segment of some European authors). The sensory areas of the palpi are reduced in one eastern species and are absent in those from California which are to be considered in a later paper.

In all species 2 setae arise from the mentum. In only a few

species large integumental projections arise anterior to those setae. One or two large circular markings occur on the head capsule just behind the mentum, depending on the species. One or two setae occur laterad of these markings, posterior to the basal-lateral angle of the mentum. These setae vary within species population. The left mandibular ramus of all eastern species bears a triangular tooth, the right an "M"-shaped tooth. Some emphasis is placed on the front margin of the labrum in separating European species, and this structure is of slightly different shape in American species. It is sexually dimorphic but other characters more easily separate the sexes. Due to an apparent change in shape of the labrum when the angle of observation is changed, and to an actual diversity of form displayed by specimens of a given species, this labral character is not exploited in this paper.

Besides the characters of the head, the meso- or more usually the metatrochanters are quite distinctive. These trochanter modifications may be present in both sexes, restricted to the males, or lacking in both sexes.

The length and width of the sixth tergite and sternite of the female is of some taxonomic value but many species will share the same measurements. The ultimate sternite of the male is medianly emarginate but the shape of this notch is of limited value because of the similarity between most species.

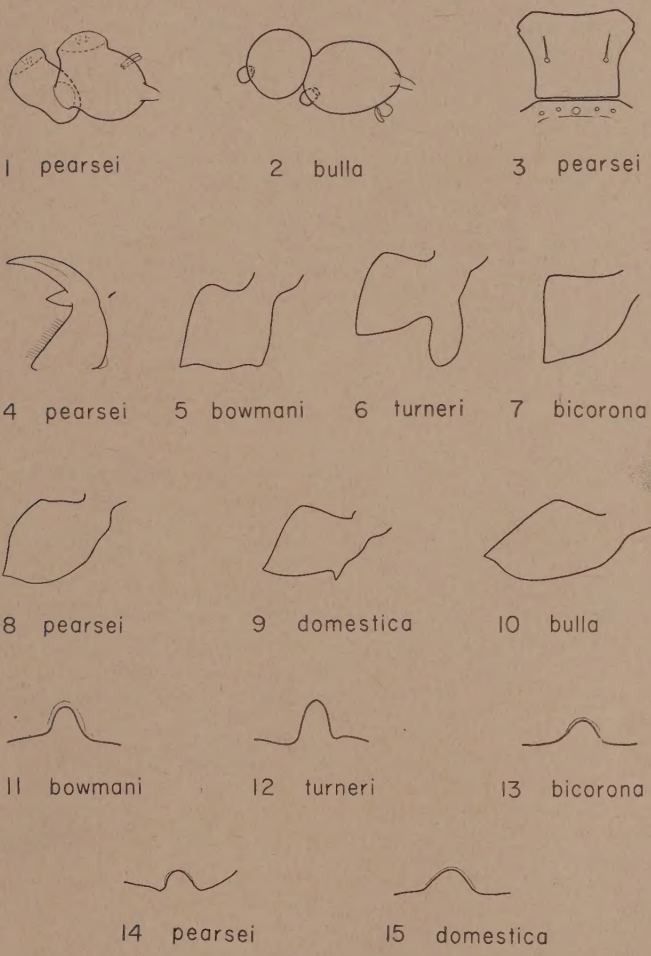
As more species are described, the male aedeagus probably will become the main structure for species determination. In resulting species groups the females may be inseparable.

Mayetia bowmani Schuster, Marsh, and Park, new species

(Figs. 5, 11, 16)

Male.—Head 0.11 mm. long × 0.12 mm. wide; pronotum 0.12 mm × 0.11 mm.; elytra 0.11 mm. × 0.12 mm. total length 0.97 mm. Elongate depressed; pale testaceous; impunctate; body pubescence monaxial, straight, suberect. Head lacking eyes; tempora sharply rounded at neck; 2 small vertexal foveae at middle, separated by the distance between fovea and lateral margin; feeble sulci extend forward from each vertexal fovea; frontal margin sinuate between antennal acetabulae; clypeus short, transverse; labrum tridentate on each side of excavate middle; mandibles arcuate; inner ramus of right mandible with symmetrical "M"-shaped tooth; tooth of left ramus triangular; ventral surface of head with small centrally located gular fovea; mentum with a pair of setae; a circular mark occurs on the head capsule with a pair of setae behind each basal-lateral angle of the mentum. Maxillary palpus with large annular sensory areas

on segments III and IV; segment IV with 3 small sensory setae on lateral surface. Antenna of 11 segments; I twice as long as II, narrowed basally; III, IV, VI, and VIII narrower than V and VII; IX through XI forming



Explanation of Plate 1

Figs. 1,2. Segments III and IV of maxillary palpi; fig.3. Mentum and front margin of head capsule; fig. 4. Left mandible; figs. 5–10. Male metatrochanters; figs. 11–15. Emarginations of male sixth sternites.

club with X and XI connate; X cup shaped with 4 macrosetae; XI with 7 long, lamellate setae spaced equidistally around base. Pronotum longer than wide, widest near apical third. Apterous. Elytron lacks basal and subhumeral fovea; definite fovea present at beginning of sutural stria; humeral angles rounded; lateral margins weakly expanded. Abdomen of 6 visible tergites: I through V similar in shape; V and VI not separated by areolate membrane; II through V with fovea at each basal-lateral angle, foveae transversely connected by pubescent sulci; VI rounded distally with marginal spiracles at the anterior fourth; six visible sternites: I with wide coxal lines; II through V alike and similar to the tergites; VI with a median emargination; the apices of a paired segment are external, sclerotized and terminal. Prosternum long, integument smooth before coxae, reticulate laterally; mesosternum reticulate; meso- and metacoxae contiguous; each tibia with 1 macroseta midway on anterior surface and definite combs of setae occur at the apex; mesotrochanters with a slight inner-posterior angle; metatrochanters relatively square (Fig. 5), the posterior edge being developed with 1 or 2 tubercles at the angle, the inner tubercle bearing a seta; tarsi of 2 segments ending in a single strong claw. Sixth sternite is approximately 0.059 mm. long, the rather widely sinuate notch (Fig. 11) being just less than 1/3 this length. Aedeagus 0.092 mm. long × 0.047 mm. wide (Fig. 16).

Female.—As in the male except for the termination of the sixth sternite which lacks emargination.

This species is known from 8 males and 9 females from ANDROPOGON BALD, SHUT-IN-RIDGE, BENT CREEK EXP. FOREST, BUNCOMBE COUNTY, NORTH CAROLINA by A. P. Jacot #34f34. The holotype (USNM 64116) is deposited in the USNM, paratypes in the USNM, and in the collections of Orlando Park and R. O. Schuster.

This species may be recognized by the metatrochanters which are modified in both sexes.

Mayetia turneri Schuster, Marsh, and Park, new species

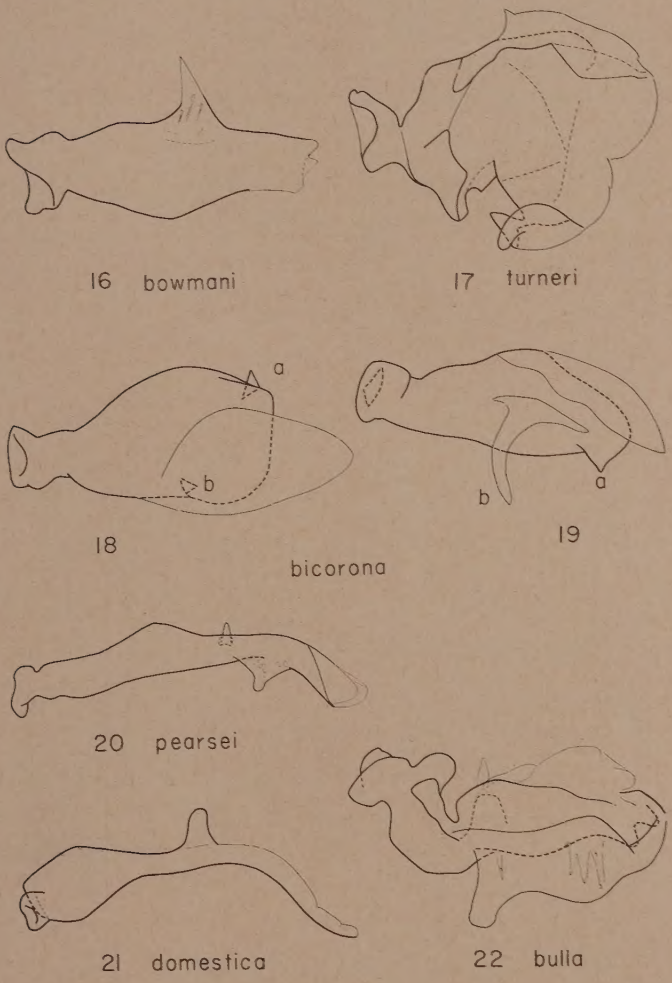
(Figs. 6, 12, 17)

Male.—Head 0.11 mm. long × 0.11 mm. pronotum 0.13 mm. × 0.11 mm.; elytra 0.10 mm. × 0.12 mm.; total length 0.81 mm. In general as described for *M. bowmani*: Maxillary palpi bearing large sensory areas on third and fourth segments; tooth of left mandibular ramus triangular; mentum simple except for the 2 setae; front margin of head capsule with 1 median mark and 1 seta on each side; metatrochanter (Fig. 6) with broad inner-posterior spine. Sixth sternite is approximately 0.084 mm. long, the notch 0.027 mm. (Fig. 12). Aedeagus 0.114 mm. long × 0.089 mm. wide (Fig. 17).

Female.—Unknown.

Holotype male was collected at MOORE COUNTY, NORTH CAR-

OLINA, May 8, 1937 by W. F. Turner from a peach orchard. Other information accompanying the specimen was "Ident.



EXPLANATION OF PLATE 2

Figs. 16–22. Aedeagi, in figs. 18, 19, the same structure is rotated 45 degrees.

37-21727" and the number "T4300." The type (USNM 64117) is deposited in the USNM.

The large sensory areas of the palpi, lack of integumental projections on the mentum and the single seta posterior to the basal-lateral angle of the mentum distinguish this species.

Mayetia bicorona Schuster, Marsh, and Park, new species

(Figs. 7, 13, 18, 19)

Male.—Head 0.12 mm. long × 0.11 mm. wide; pronotum 0.12 mm. × 0.09 mm.; elytra 0.10 mm. × 0.10 mm.; total length 0.87 mm. Essentially as described for *M. bowmani:* Maxillary palpus with large sensory areas; left mandibular ramus with triangular tooth; mentum lacking integumental projections; head capsule immediately behind mentum with 2 large circular marks, 1 each side of center; 1 or 2 setae at the basal-lateral angle of the mentum; metatrochanter not modified (Fig. 7). Sixth sternite is approximately 0.046 mm. long, the notch being just over 1/5 this length (Fig. 13). Aedeagus 0.094 mm. long × 0.46 mm. wide (Figs. 18, 19).

Female.—Unknown.

The single male (the holotype) was collected from Cecil sandy loam, WEST EDGE OF THOMASVILLE, UPSON COUNTY, GEORGIA, July 21, 1936, by W. F. Turner. The holotype (USNM 64118) is deposited in the USNM.

The configuration of the aedeagus readily separates this species from any other. It may be assumed that the female will have the same markings as the male on the anterior margin of the head capsule, and if so, this will be useful in associating the sexes.

Mayetia pearsei Schuster, Marsh, and Park, new species

(Figs. 1, 3, 4, 8, 14, 20)

Male.—Head 0.13 mm. long × 0.13 mm. wide; pronotum 0.15 mm. × 0.12 mm.; elytra 0.13 mm. × 0.12 mm.; total length 1.18 mm. As in *M. bomani*: Sensory areas of segments III and IV of maxillary palpi large (Fig. 1); left mandibular ramus with triangular tooth (Fig. 4); mentum simple except for the 2 usual setae; ventral front margin of head capsule with median circular marking and 2 setae on each side (Fig. 3); metatrochanter not modified (Fig. 8). Sixth sternite is approximately 0.067 mm. long with a small notch of about 1/5 the length (Fig. 14). Aedeagus long, thin 0.161 mm. × 0.147 mm. (Fig. 20).

Female.—As in the male except for the distal end of the abdomen which is normal for this sex as described previously.

Holotype male was collected at DUKE FOREST, DURHAM, NORTH CAROLINA by A. S. Pearse on April 28, 1945, 2 to 5 inches deep in clay soil under oaks. Eight additional male and 15 female paratypes were collected at the same locality by A. S.

Pearse from sand and clay under pines and oaks during the months of February through August, 1945. The holotype is deposited in the Illinois Natural History Survey, paratypes in the USNM and in the collections of Orlando Park and R. O. Schuster.

The 3rd and 4th segments of the maxillary palpus of both sexes have on their lateral margins large, raised, annular developments separating this species immediately from *M. bulla* and the rounded posterior edge of the metatrochanters distinguishes this species from *M. bowmani*. At least these 3 species occur in North Carolina and will probably be found together.

Mayetia domestica Schuster, Marsh, and Park, new species

(Figs. 9, 15, 21)

Male.—Head 0.13 mm. long × 0.13 mm. wide; pronotum 0.14 mm. × 0.12 mm.; elytra 0.13 mm. × 0.14 mm.; total length 1.13 mm. This species is, in general, as described for *M. bowmani*: Maxillary palpus having large annular sensory areas on segments III and IV; tooth of left mandibular ramus with triangular tooth; mentum lacking integuanterior to each seta; the normal median circular mark with 1 long seta on each side occurs on the front ventral surface of the head capsule; metatrochanter with a small tooth midway on the inner surface (Fig. 9); sixth sternite is 0.052 mm. long, the notch 0.013 mm. (Fig. 15). Aedeagus long, thin 0.131 mm. × 0.05 mm. (Fig. 21).

Female.—Unknown.

Holotype male (USNM 64119) was collected at DEXTER, STODDARD COUNTY, MISSOURI, September 26, 1936, by W. F. Turner. It was taken from brown silt loam in a peach orchard at Crowley Ridge, and is deposited in the USNM. An additional male considered as probably conspecific but not included in the type series differs in having a mark (setal insertion?) in addition to the seta on the head capsule behind the basal-lateral angle of the mentum and in having a slightly shorter sixth sternite. It was collected at Stoddard County, Missouri on September 25, 1936 by W. F. Turner and bears the number 1213.

This species is separated by the characters of the mentum from all other species possessing sensory areas on the third and fourth segments of the maxillary palpi.

Mayetia bulla Schuster, Marsh, and Park, new species

(Figs. 2, 10, 22)

Male.—Head 0.11 mm. long × 0.12 mm. wide; pronotum 0.14 mm.

× 0.12 mm.; elytra 0.12 mm. × 0.15 mm.; total length approximately 1.01 mm. Essentially as described for *M. bowmani*: Lateral margins of maxillary palpi bearing small knob-like sensory developments (Fig. 2); left mandibular ramus with triangular tooth; mentum lacking integumental projections anterior to the pair of setae; front margin of head capsule with single circular marking and 2 lateral markings or setae on each side; metatrochanter not modified, the posterior edge rounded (Fig. 10). Sixth sternite is approximately 0.084 mm. long, the notch about 1/3 this distance. Aedeagus broad, complex, 0.121 mm. long × 0.071 mm. wide (Fig. 22).

Female.—As in the male except for the distal abdominal segment which is normal for this sex.

This species is known from 1 male (the holotype) collected from clay beneath pines at DUKE FOREST, DURHAM, NORTH CAROLINA by A. S. Pearse on August 18, 1945, and 1 female with the same data except that it was taken from sand beneath pines on July 14, 1945. The holotype is deposited in the Illinois Natural History Survey, the female paratype in the collection of Orlando Park.

Both sexes of *Mayetia bulla* may be separated from all known species by the knob-like sensory developments on the maxillary palpi.

KEY TO SPECIES OF UNITED STATES MAYETIA EXCLUDING CALIFORNIA

1 Sensory developments of maxillary palpi small knob-like structures occupying a small fraction of segments III and IV ..... *M. bulla*
Sensory developments of maxillary palpi large areas about half the length of segment IV 2

2(1) Mentum with 2 integumental projections anterior to a pair of setae ..... *M. domestica*
Mentum lacking integumental projections anterior to the pair of setae 3

3(2) Metatrochanter with inner-posterior edge rounded 4
Metatrochanter with inner-posterior edge forming a 90 degree angle or developed into a spine 5

4(3) Single median circular mark occurring behind mentum ..... *M. pearsei*
Two circular marks occurring behind mentum ..... *M. bicorona*

5(3) Metatrochanter with large inner-posterior spine ..... *M. turneri*
Metatrochanter roughly square in outline ..... *M. bowmani*

The following localities pertain to collections of *Mayetia* from which we have seen only females. Combined with the records following the species descriptions, they show the genus *Mayetia* to be widely distributed in the United States. They also point to areas in which specimens might easily be collected

by persons interested in advancing the understanding of this group. 1. Pike County, Arkansas. 2. Mount Olive, Robertson County, Kentucky. 3. Humboldt, Coles County, Illinois (natural prairie soil). 4. Matton, Coles County, Illinois. 5. Anson and Moore Counties, North Carolina. 6. Brown County, Texas. 7. Parker Islands, 7 miles S.E. of Lake Highland County, Florida.

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A NEW SPECIES OF TRAGOSOMA FROM SOUTHEASTERN ARIZONA

(Coleoptera: Cerambycidae)

E. Gorton Linsley

University of California, Berkeley

The following new species of *Tragosoma* is described at this time in order that the name may be available for use in connection with biological studies to be reported elsewhere.

Tragosoma chiricahuae Linsley, new species

Male. Form elongate, narrow, subparallel; integument dark brown, shining, sparsely pubescent. *Head* coarsely, confluently punctate; eyes narrowly separated by a distance about equal to pedicel of antennae; antennae attaining apical one-fourth to one-sixth of elytra, segments glabrous, opaque, apices produced externally, punctures fine, dense, elongate. *Pronotum* coarsely, irregularly punctate, disk irregularly elevated, shining, glabrous; pronotal margins thinly clothed with long, erect golden hairs, lateral spine

projecting forward slightly; pro-, meso-, and metasterna shining, finely, densely punctate, pubescence long and moderately dense but scarcely obscuring integument. *Elytra* subparallel; surface glabrous, shining, punctures large but less deep than those of pronotum; sutural spines much shorter than lateral spine of pronotum, slightly curved. *Legs* slender; femora sparsely hairy. *Abdomen* shining, finely not densely punctate, thinly pubescent; fifth sternite about as long as fourth, apex emarginate. Length, 23-31 mm.

Female. Form more robust than male, punctation and vestiture similar but marginal pronotal pubescence lacking; antennae attaining only middle of elytra; abdomen with fifth sternite elongate, apex entire or feebly rounded. Length, 25-34 mm.

Holotype male (California Academy of Sciences) from the Southwestern Research Station of the American Museum of Natural History, FIVE MILES WEST OF PORTAL, CAVE CREEK CANYON, 5400 ft. elevation. CHIRICAHUA MOUNTAINS, COCHISE COUNTY, ARIZONA, August 16, 1958 (J. R. Quezada), allotype female (Calif. Acad. Sci.), same locality, July 25, 1955 (P. D. Hurd, Jr.) and seven paratypes (California Insect Survey), also from the same locality, on various dates from June 20 to August 18 (J. M. and S. N. Burns, C. W. Kirkwood, C. G. Moore, P. D. Hurd, Jr.). Three additional paratypes from the Chiricahua Mountains, a male collected July 27, 1957 and two females collected August 2, 1952, are in the collection of J. N. Knull. A male from Juan Miller Campground, 17 miles north of Clifton, Blue Range of White Mountains, Greenlee County, Arizona, July 7, 1958 (J. M. and S. N. Burns, in collection of the California Insect Survey) is also assignable to this species but is not designated as a paratype.

This species resembles *T. pilosicornis* Casey in the dark color and glabrous pronotum but the average size is larger, the punctation of the pronotal disk and base of the elytra is less coarse, the antennae of the male are more opaque and densely punctate, and the sutural spines of the elytra are much shorter, being only about half as long as the thoracic spine. Aside from the dark color, glabrous pronotum, irregular pronotal disk and coarser punctation, which are similar in both sexes, *T. chiricahuae* further differs from *T. depsarius* (Linnaeus) in the narrowly separated eyes and opaque antennae of the male.

UNDESCRIBED SPECIES OF TIPULIDAE FROM THE WESTERN UNITED STATES

Part V*

(Diptera)

CHARLES P. ALEXANDER

University of Massachusetts, Amherst

The preceding part under this general title was published in the Pan-Pacific Entomologist, 26:81–85; 1950. At this time I am describing three species belonging to the genus *Tipula* from California, all collected by myself in 1953 and 1957. The major work on the crane-flies for the California Insect Survey is progressing rapidly but records for many species that should occur are still lacking and it is evident that further intensive field work must be done. I am planning to do further collecting in the state in 1958 and 1959 and any miscellaneous specimens from poorly known parts of the state and at unusual seasons would be greatly appreciated in order to complete the record.

Tipula (Bellardina) umbra Alexander, new species

Allied to *gothicana* Alexander; mesonotal praescutum with the restricted ground buffy yellow, with four discal stripes and the lateral margins brown; scutum chiefly dark brown, each lobe with a V-shaped pale mark; femora obscure yellow, tips narrowly black, claws of male toothed; wings strongly darkened, variegated by restricted darker and numerous small yellow markings; veins beyond cord with numerous macrotrichia; abdomen brownish yellow, lateral tergal borders blackened; male hypopygium with the tergite large, posterior border shallowly emarginate, with conspicuous lateral lobes, ventral surface with a median lobe directed cephalad, the apex spiculose; dististyles large, very irregular in outline.

Male.—Length about 21 mm.; wing 18.5 mm.; antenna about 3.4 mm.

Female.—Length about 20 mm.; wing 20 mm.

Frontal prolongation of head dark brown above, including nasus, more reddish brown on sides, obscure yellow beneath at base; palpi dark brown. Antennae of moderate length in both sexes; scape and pedicel obscure yellow to brownish yellow, flagellum brown; verticils much longer than the segments, basal enlargements small. Head dark brown, paler in front, orbits restrictedly pale.

Pronotum obscure yellow, with three brown areas. Mesonotal praescutum with the restricted ground obscure buffy yellow, the surface almost covered by four brown stripes that are narrowly and vaguely bordered by darker, the intermediate pair confluent at suture; humeral and lateral

---

* Contribution No. 1289 from the Entomological Laboratory of the University of Massachusetts.

I wish to express my indebtedness to the National Science Foundation for financial aid in conducting field explorations in California in 1957.

margins similarly darkened, restricting the lateral interspace to a narrow line; scutum chiefly dark brown, each lobe with a V-shaped pale mark; scutellum dark brown, broadly paler posteriorly; parascutella dark brown; mediotergite light brown, posterior border with two circular pale areas. pleura and pleurotergite chiefly brown, variegated with paler. Halteres with stem brown, restrictedly reddened at base, apex of knob obscure yellow. Legs with coxae infuscated basally, broadly yellow at tips, trochanters obscure yellow, with a large brownish black spot on lower face; femora obscure yellow, tips narrowly but conspicuously black, the amount subequal on all legs; tibiae obscure yellow, tips narrowly brownish black; basitarsi brownish yellow, the outer ends, with remainder of tarsi, black; claws of male toothed. Wings with the ground strongly darkened, variegated by restricted darker brown areas and small but more numerous yellow marks; darker areas include stigma, origin of *Rs* and a spot at near one-third the length of cell *Cu;* the yellow marks occur before and beyond origin of *Rs*: poststigmal extending into cells R_2 and R_3; at cord; near outer end of cell *M*: before and beyond the darkened area in cell *Cu*, and as marginal spots in cells R_5, M_1, *2nd* M_2, M_3, and two in cell *1st A*, those in the medial field small; prearcular and costal fields slightly paler than the ground; veins yellowish brown. Veins beyond cord with numerous macrotrichia, more restricted on *M*. Venation: R_3 sinuous, narrowing the cell at near midlength; cell *1st* M_2 small, subpentagonal; petiole of cell M_1 and *m* subequal.

Abdominal tergites brownish yellow, lateral borders conspicuously blackened, posterior margins of segments narrowly pale; basal sternites of male clearer yellow, outer segments more darkened; hypopygium yellowish brown. Ovipositor with valves elongate; cerci castaneous, gently upcurved, tips obtuse; hypovalvae compressed, yellow. Male hypopygium with the tergite large, narrowed posteriorly, the apex shallowly emarginate, with conspicuous lateral lobes; on ventral surface with a large fleshy lobe directed cephalad, the apex spiculose. Two dististyles, both very irregular in outline, the outer style larger, at apex produced into two lobes or blades, before tip with a further flattened blade subtended outwardly by a slender rod; inner style nearly as large, appearing as a slightly curved flattened blade, the concave inner margin at near midlength produced into a point. Gonapophyses appearing as two very slender rods, longer than the sheath of the aedeagus; what appears to be the outer part of this organ lies detached in the type slide, appearing as a slender sclerotized rod.

Holotype male, CASTLE CRAGS STATE PARK, SHASTA COUNTY, CALIFORNIA, 2000 ft., July 6, 1953 (Alexander). Allotopotype female, pinned with type.

The nearest ally is the generally similar *Tipula (Bellardina) gothicana* Alexander, which is widely distributed in western America and readily distinguished by the quite different male hypopygium, especially the tergite and dististyles.

Tipula (Lunatipula) twightae Alexander, new species

Allied to *perfidiosa* Alexander; antennal flagellar segments of male

strongly incised; mesonotal praescutum with three orange-yellow stripes, the interspaces slightly darker; wings weakly suffused with brown, the prearcular and costal fields more brownish yellow, darkened pattern inconspicuous; abdomen obscure yellow, outer segments darker; inner dististyle of male hypopygium without a dorsal crest, lower beak well-developed; outer basal lobe much as in *perfidiosa*.

Male.—Length about 15 mm.; wing 15 mm.; antenna about 5 mm.

Frontal prolongation of head brownish yellow, nasus conspicuous; palpi with basal segments testaceous yellow, outer segments black. Antennae of male relatively long, as shown by the measurements; basal three segments obscure yellow, remaining segments vaguely bicolored, the basal enlargements black, the remainder brown; segments a trifle longer than the verticils; flagellar segments very strongly incised, the long outer swelling being fully as deep as the short-oval basal enlargement. Head gray, clearer gray in front and on the narrow orbits; vertex with the central area narrowly darker brown, narrowed to a point behind, without setae.

Pronotum buffy yellow. General coloration of mesonotum orange-yellow, including the three praescutal stripes, the interbases slightly darker brown; centers of scutal lobes similarly orange-yellow; scutellum and mediotergite sparsely pruinose, the former with a vague capillary darker line. Pleura buffy yellow, sparsely pruinose. Halteres with stem obscure yellow, knob darkened. Legs with coxae buffy, sparsely pruinose; trochanters yellow; femora and tibiae obscure brownish yellow, tips narrowly and inconspicuously darker brown; tarsi dark brown to brownish black; claws of male long, toothed. Wings weakly suffused with brown, prearcular and costal fields more brownish yellow; stigma pale brown, relatively inconspicuous; darkened wing pattern very reduced, including small brown areas at origin of *Rs* and over anterior cord; centers of outer cells vaguely darkened; obliterative area at cord relatively conspicuous, extending from before stigma into base of cell M_3; veins brown, more brownish yellow in the prearcular and costal areas. Venation: *Rs* more than twice R_{2+3}; petiole of cell M_1 shorter than m; *m-cu* at fork of M_{3+4}, the latter short, less than one-half m.

Abdominal tergites obscure yellow, clearer basally, sternites still clearer; outer subterminal segments more darkened. Male hypopygium with the tergite deeply emarginate on both the posterior and cephalic borders, the former produced into two lobes, margins narrowly sclerotized and microscopically roughened; on ventral surface of plate on either side with a V-shaped carina, the margins roughened. Ninth sternite with a complex bilobed appendage on either side of the aedeagus. Basistyle with its dorsal end produced into a slender arm adjoining the sternite. Outer dististyle elongate, gently widened at outer end, the margin fringed with long conspicuous black setae; inner style with the main body relatively narrow, beak very slender at outer end, lower beak much stouter; no developed dorsal crest as in some allied species; outer basal lobe generally as in *perfidiosa* and *modoc* Alexander, appearing as a flattened plate, the outer third narrowed into a long slender spine, surface of expanded basal part

with long pale setae: sensory pits in a compact group at base between the body of style and the outer basal lobe. Phallosome appearing as a flattened blade that is produced into paired blackened points. Eighth sternite sheathing, narrowed outwardly, the truncated posterior border with two triangular groups of long brownish yellow setae, the hairlike tips pale and conspicuously twisted.

Holotype male, CASTLE CRAGS STATE PARK, SHASTA COUNTY, CALIFORNIA, 2000 ft., July 8, 1953 (Alexander).

I take great pleasure in dedicating this interesting crane-fly to Mrs. Mary Twight (Mrs. Benjamin Twight), former custodian of the Castle Crags State Park, to whom we are indebted for many kindly favors. Mrs. Twight is a capable botanist who has made many interesting plant discoveries in and near Castle Crags. The type of this interesting fly was taken along small streamlets that flowed into the Sacramento River at the park. It was closely associated with the striking phantom orchid or silver slipper, *Cephalanthera Austinae* (Gray), that was numerous and in full flower at this date.

The fly is related to species such as *Tipula (Lunatipula) perfidiosa* Alexander, *T. (L.) modoc* Alexander and *T. (L.) macnabi* Alexander, all with somewhat similar antennae and having the general plan of the male hypopygium the same, differing very conspicuously in the details of structure of the latter, particularly the tergite and inner dististyle.

Tipula (Lunatipula) leiocantha Alexander, new species

Belongs to the *impudica* group, allied to *carunculata* Alexander; mesonotal praescutum grayish yellow with a broad fulvous brown central stripe that is narrowly margined laterally with dark brown; femora obscure yellow, tips narrowly darkened; wings strongly tinged with brown, restrictedly patterned with darker brown and subhyaline areas; male hypopygium having the tergal canthi with smooth margins; inner dististyle with the lower apical appendage nearly as long as the remainder of style; eighth sternite with posterior border subtruncate, very densely fringed with long yellow setae.

Male.—Length about 15–16 mm.; wing 15–16.5 mm.; antenna about 4.3–4.5 mm.

Frontal prolongation of head elongate, polished brownish yellow; nasus very short; palpi with basal three segments brownish yellow, terminal segment dark brown. Antennae moderately long, as shown by the measurements; scape and pedicel light yellow, flagellum brownish black to black; flagellar segments exceeding the verticils in length; basal enlargements well-developed. Head grayish brown, clearer gray on front and the very narrow orbits; a capillary dark brown central vitta extending from the low vertical tubercle backward.

Pronotum obscure yellow, vaguely patterned with pale brown areas. Mesonotal praescutum obscure grayish yellow, patterned with fulvous brown and dark brown; a broad fulvous brown central stripe, narrowly margined laterally with dark brown; lateral stripes dark brown; setae of interspaces darkened; scutum grayish yellow, each lobe with two brown areas, the anterior one very small; scutellum grayish yellow with a central darkening and a less evident lateral spot near base; mediotergite grayish yellow, more or less patterned with reddish brown on central and posterior parts; pleurotergite with the katapleurotergite darker than the anapleurotergite. Pleura brownish yellow, vaguely patterned with darker. Halteres with stem brownish yellow, clearer yellow basally, knob dark brown. Legs with the coxae and trochanters obscure yellow; femora obscure yellow, tips narrowly darkened; tibiae and tarsi brownish yellow, the outer tarsal segments passing into dark brown; terminal tarsal segment with a blackened ventral spot; claws of male toothed. Wings strongly tinged with brown, somewhat darker in outer radial field and over *m-cu;* a restricted darkening near midlength of cell 2nd *A* at margin; stigma darker brown; obliterative areas whitened but relatively inconspicuous, poststigmal brightening more yellowed; veins brown. Venation: Petiole of cell M_1 subequal to or shorter than *m*.

Abdominal tergites polished yellow; a narrow, nearly continuous median brown vitta; lateral borders broadly light gray, margined internally by a narrow broken darkened line, in some cases this is evident only on the basal ring of the segment; sternites yellow, outer segments slightly darker; hypopygium brownish yellow. Male hypopygium generally as in *lyrifera* Dietz and allies. Ninth tergite with a narrow median incision, the canthi triangular, subacute at tips, margins entirely smooth; inflexed lateral parts subtriangular in outline; subtergal process parallel-sided, the apex extended into pale membrane. Basistyle with the apical sclerotized point short but slender. Outer dististyle broad basally, strongly narrowed on outer half; inner style with the beak obtuse; lower apical appendage nearly as long as the remainder of style, appearing as a straight flattened blade, the inner margin with a few weak scattered setae, the outer margin of basal half with abundant delicate setae. Eighth sternite with the posterior border subtruncate, very densely fringed with long yellow setae.

Holotype male, Big Pine Creek, Inyo County, California, on sage-covered hillsides at Glacier Lodge, 7800 ft., July 11, 1957 (Alexander). Paratopotypes, two males, July 10–11, 1957. Associated with *Tipula (Lunatipula) mono* Alexander.

The described species of the *impudica* group that have the lower apical appendage of the inner dististyle of the male hypopygium greatly lengthened as in the present fly, include *Tipula (Lunatipula) carunculata* Alexander, *T. (L.) diversa* Dietz and *T. (L.) lyrifera* Dietz, all differing among themselves in coloration of the body and wings and especially in the structure

of the male hypopygium. The present fly is best told from *carunculata* by the hypopygial characters, including the entirely smooth tergal canthi.

AN EMERGENCE NOTE ON THE ROUNDHEADED CONE BORER, PARATIMIA CONICOLA FISHER

(Coleoptera: Cerambycidae)

In September of 1956, a series of cones of the knobcone pine, *Pinus attenuata* were collected from an area nine miles west of Lakeport, Lake County, California. These cones were judged to be two years old at the time of collection, that is 1954 was the assumed year of maturation.

The cones were brought into Berkeley and placed in a half gallon cardboard ice cream container, a device used in cone-insect rearing studies. The container was kept in an outdoor screened insectary.

On February 15, 1957, a single adult of *Paratimia conicola* Fisher emerged from one of the cones. On March 12, of the same year, two more beetle adults emerged, one from the cone of the previous emergence and the second from another cone. On April 16, 1958, a single female beetle emerged from the cone which had produced the two beetles in the year before, and on March 10, 1959, still another female emerged from the cone which had produced three beetles in the past two years. There were no emergence holes in the cones at the time of collection.

These results suggest that the period of larval development in this species is variable, a factor which might contribute to survival of the species in years when few cones are available for oviposition. It is possible, however, that the cones were older than they appeared to be and that they may have been attacked by females in more than one season, or that conditions in the rearing container retarded the development of certain of the larvae.—HERBERT RUCKES, JR., *University of California, Berkeley*.

SOME NOMENCLATORIAL PROBLEMS IN THE GENUS XYLOCOPA LATREILLE

(Hymenoptera: Apoidea)

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A sound nomenclatorial foundation is a fundamental and an absolutely essential requisite for any well-executed taxonomic study. Obviously, it follows that any investigation dependent upon this foundation can only reflect it. Consequently, it is incumbent on those individuals providing these nomenclatorial bases to thoroughly, albeit exhaustively, investigate each nomenclatorial proposal before it is made. An investigator who fails to recognize or even consider the eventual ramifications within the sphere of knowledge that his proposal may have, clearly demonstrates a genuine lack of concern for future endeavors. It should be remembered that in the final analysis a name serves as a basis for the accumulation of information. Intelligent progress depends on this association and moreover demands it. Inattention to these matters, for whatever reason, not only hinders and confuses progress but invites such poignantly critical views as those expressed by Stärcke (1953) in his satirical essay on nomenclature.

An examination of the literature pertaining to the members of the genus *Xylocopa* Latreille (including *Mesotrichia* Westwood) reveals that there have been more than 700 names applied which involve a rather considerable bibliographic history. A number of nomenclatorial problems require attention and this opportunity is taken so as to facilitate their handling in a forthcoming paper. Since the number of homonymic names applied in the genus is relatively great, a listing of these is presented in summary form. In view of the uncertain zoological status of *Mesotrichia* Westwood (present studies tend to support the view that it is an African subgenus of *Xylocopa* containing less than a dozen species) no nomenclatorial changes affecting the names proposed in *Mesotrichia* are made.

I am indebted to Dr. M. A. Lieftinck, Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands for reviewing the manuscript and offering particularly valuable advice.

The following name changes are effected for currently existing primary homonymic names which represent bona fide (i.e.

zoologically valid) members of the genus *Xylocopa* Latreille:

Xylocopa nigrella Hurd, nom. nov.

Xylocopa nigrella Hurd, *nomen novum pro Xylocopa caffra nigrescens* Maidl, 1912, Ann. K. K. Naturhist. Hofmus., Wien, 26: 283, 330 ("... 2♂, das eine aus Mikindani . . ., das andere aus W.–Usambara . . ."), *nec Xylocopa aestuans* var. *nigrescens* Friese, 1901, Die Bienen Europa's, 6: 227 (female, "Borneo"), *nec Xylocopa sauteri* var. *nigrescens* Friese, 1910, Verhandl. der K.K. Zool.–Bot. Gesellsch., 60: 410 (male, "Formosa").

Since Maidl (1912:283) did not select one of the two males as the holotype, I designate his first cited male (Mikindani, [Tanganyika Territory]) to serve this purpose. *X. nigrella*, while clearly a member of the *Xylocopa caffra* (Linnaeus) group, is a distinct species assignable to the subgenus *Koptortosoma* Gribodo.

I have been unable to determine satisfactorily the zoological status of *Xylocopa aestuans* var. *nigrescens* Friese which was described from "Borneo." The *Xylocopa* of Borneo (including Sarawak) are rather poorly known. Apart from the description of several new taxa, its carpenter bee fauna has been investigated only coincidental with taxonomic studies of other geographic areas. From the description afforded by Friese (1901:227) it seems very improbable that this carpenter bee is to be associated with *X. aestuans* (Linnaeus). Its correct status, however, must await future studies.

It should be noted that the Sarawak *Xylocopa caerulea* var. *viridis* Meade-Waldo (1916:465) is preoccupied by *X. viridis* Smith (1854:360) from Brazil. Dr. M. A. Lieftinck informs me that *viridis* Meade-Waldo is correctly placed as a color variety of *X. (Cyanoderes) caerulea* (Fabricius), a position also held by Maa (1939:94,95). Since Van der Vecht (1953:67) has recognized a "local form" or subspecies of *X. caerulea* from Bangka Island it seems altogether probable that the preoccupied *viridis* Meade-Waldo may prove to be a subspecies and accordingly is renamed.

Xylocopa caerulea meade-waldoi Hurd, nom. nov.

Xylocopa caerulea meade-waldoi Hurd, *nom. novum pro Xylocopa caerulea* var. *viridis* Meade-Waldo, 1916, Ann. Mag. Nat. Hist. (8) 17:465 (female, "Sarawak: Kuching"), *nec Xylocopa viridis* Smith, 1854:360, (male, "Hab. Brazil (Rio Tapajos)").

Xylocopa isabelleae Hurd, nom. nov.

Xylocopa isabelleae Hurd, *nomen novum pro Xylocopa eximia* Friese, 1908, Deutsche Ent. Zeitschr. p. 569 (female, "von Ikutha, 1000 m, Brit.

Ostafrika"), *nec Xylocopa eximia* Pérez, 1901, Actes Soc. Linn. Bordeaux, 56 (ser. 6, vol. 6): 87–88 (female, "Bolivie").

This species, which I take pleasure in dedicating to my wife Grace Isabelle, belongs to the subgenus *Koptortosoma* and is apparently related to *Xylocopa lateritia* Smith, 1854:346, a species originally described from the "Isle of Johanna (Mozambique)." The Neotropical species, *Xylocopa eximia* Pérez, 1901:87 is a member of the subgenus *Neoxylocopa* Michener and is related to species of the "*similis* group" (Moure, 1949:455–458).

Resurrection from synonymy of *Xylocopa ocularis* Pérez, 1901 is necessitated by the discovery that the Lesser Sunda Islands *Xylocopa dimidiata* Lepeletier, 1841 is a primary homonym of the earlier described Neotropical *X. dimidiata* Latreille, 1809.

XYLOCOPA OCULARIS Pérez, new status

Xylocopa dimidiata Lepeletier, 1841, Histoire naturelle des insectes. Hyménoptères, 2:199 (female, "Ile de Timor"), *nec* Latreille, 1809:95. *New Synonymy.*

Xylocopa ocularis Pérez, 1901, Actes Soc. Linn. Bordeaux, 56 (ser. 6, vol. 6):62–63 (female, "Timor").

For some curious reason the work of Latreille (1809), in which two new species of *Xylocopa* (*X. chrysoptera*, p. 93 and *X. dimidiata*, p. 95) were described, appears not to have been directly consulted by specialists of this group, except by Pérez (1901:71–73), since the time of Smith (1874:287). If Cockerell (1907:228) had done so he most assuredly would not have proposed *Xylocopa batesi* under the circumstances that: "*X. dimidiata* Lep. is from Timor; . . . *X. dimidiata* Smith, Trans. Ent. Soc. Lond., 1874, p. 287, from Ega on the Amazons, may take the name *X. batesi*, n. n.". In any event *Xylocopa dimidiata* Latreille, 1809:95 preoccupies *X. dimidiata* Lepeletier, 1841:199 and since both are zoologically valid members of the genus *Xylocopa* Lepeletier's preoccupied name should be replaced with *Xylocopa ocularis* Pérez, 1901:62, which has been shown by Van der Vecht (1953:68) to be equivalent zoologically to it. Lieftinck (1955:25–27) has treated this species in some detail and has provided an excellent illustration of the male genitalia.

Certain matters connected with the nomenclature of *Koptortosoma* Gribodo and *Schönherria* Lepeletier require attention if the manifold taxonomic problems associated with these cate-

gories are to be cogently pursued. Toward achieving that end the following is offered as at least a partial solution of this situation.

Subgenus KOPTORTOSOMA Gribodo

Koptortosoma Gribodo, 1894, Bull. Soc. Ent. Italiana, 26:271 (type: *Koptortosoma* gabonica Gribodo, 1894:272 designated by Sandhouse, 1943, Proc. U. S. Natl. Mus., 92:561).

Koptorthosoma Dalla Torre, 1896, Cat. Hymen., 10:202 (emendation *pro Koptortosoma* Gribodo, 1894:271).

Coptorthosoma Pérez, 1901, Actes Soc. Linn. Bordeaux, 56 (ser. 6, vol. 6): 3 (emendation *pro Koptortosoma* Gribodo, 1894:271 and *Koptorthosoma* Dalla Torre, 1896:202.).

Orbitella Ma[a], 1938, Rec. Indian Mus., 40:270, 305 (type: *Xylocopa confusa* Pérez, 1901:39, 57), *nom. praeocc., nec Orbitella* Douvillé, 1915.

Maiella Michener, 1942, Jour. New York Ent. Soc. 50:282, *nom. nov. pro Orbitella* Ma[a], 1938, *nec Orbitella* Douvillé, 1915 = *Coptorthosoma* Pérez, 1901, *teste* Maa, 1954, Vidensk. Meddel. Dansk Naturhist. For. Kobenhavn, 116:192; zoological status yet to be determined, *teste* Lieftinck, 1957, Nova Guinea, new ser., 8(2):325.

Euryapis Sandhouse, 1943, Proc. U. S. Natl. Mus., 92 (3156):551, *nom. nov. pro Orbitella* Ma[a], 1938, *nec* Douvillé, 1915, antedated by *nom. nov. Maiella* Michener, 1942:282, q. v.

As noted above, Sandhouse (1943:561) designated *Koptortosoma gabonica* Gribodo (1894:272) as the type of *Koptortosoma* Gribodo. Cockerell (1930:299–300) in his comment concerning "*Mesotrichia stanleyi* (LeVeque)" states: "This is undoubtedly the male described as *M. gabonica* (Gribodo); but the female of *gabonica*, first described, must stand as the type and I am not sure that the sexes are correctly associated." Following this action any interpretation to determine the zoological status of *Koptortosoma* Gribodo must be founded first upon the characteristics of the Cockerell designated lectotype (female) of *Koptortosoma gabonica* Gribodo.

Most assuredly the emendations *Koptorthosoma* Dalla Torre and *Coptorthosoma* Pérez were unnecessarily proposed for *Koptortosoma* Gribodo. In this connection, Dr. M. A. Lieftinck (*in litt.*) points out: "I can not see why these emendations should be accepted, since *Koptortosoma* is a validly proposed name, not a lapsus calami, and Gribodo even gave an explanation of the name, leaving no rights to an emendation."

The zoological status of the subgenus *Koptortosoma*, which currently embraces a large number of species (approximately 215 names applied) chiefly distributed in the Ethiopian, Oriental,

and Australo-Papuan Regions, cannot be satisfactorily determined until the question of its correct type species is established. Vitzthum (1930:314ff) concludes that the type of *Koptortosoma* Gribodo, 1894:271 is *Xylocopa aestuans* (Linnaeus), 1758:579 (one of the several species included by Gribodo in his original proposal), but states that it really doesn't matter (p. 315) since the Oriental and African forms agree in general characteristics. Vitzthum redefines the subgenus largely by the addition of a geographical qualification so as to exclude certain New World species which would fit Gribodo's original diagnosis and further by a statement of the mites (*Dolaea*, currently *Dinogamasus*) intimately associated with these Old World carpenter bees. As Vitzthum *(ibid.)* so appropriately declares, recognition of *Xylocopa aestuans* (Linnaeus) as the type species presents certain difficulties because of the inexact type locality given by Linnaeus for *X. aestuans*, *viz.*, "*Habitat in* calidis *regionibus*."

Obviously, if Vitzthum's type designation of *Xylocopa aestuans* (Linnaeus) is construed as valid and therefore takes precedence over that (*Koptortosoma gabonica* Gribodo) later provided by Sandhouse (1943:561) it appears to me that unnecessary complications are introduced into an already confounded situation. In view of this it seems to me that greater uniformity and less confusion would result if *Koptortosoma* Gribodo with *Koptortosoma gabonica* Gribodo as its type species be rigidly accepted.

Not infrequently *Mesotrichia* Westwood (1838:112) has been used interchangeably with and sometimes to supplant *Koptortosoma* Gribodo (including also its variant spellings). Cockerell (1906:364) concluded that it is sufficiently distinct from *Xylocopa* to be maintained as a genus and he regarded "*Koptorthosoma*" as a subgenus of it. In his subsequent papers, as well as those of his pupil Miss Norma LeVeque, *Mesotrichia* was consistently accorded generic status and consequently all those species described or assigned to *Koptortosoma* were included in it. Maa (1940: 136–137) has discussed the scope and status of *Mesotrichia* and "*Coptorthosoma*" and more recently (Maa, 1954:192) indicates that *Mesotrichia* is probably to be recognized as an independent genus. Maa *(ibid.,)* also indicates that the subgenus *Platynopoda* Westwood possibly also is to be

removed from the genus *Xylocopa* and accorded generic status.

My present investigations, however, tend to support a classification wherein *Koptortosoma* Gribodo, *Mesotrichia* Westwood, and *Platynopoda* Lepeletier are considered as subgenera of the genus *Xylocopa*. This view is supported by the existence of intermediate evolutionary units, many of which already have been characterized as subgenera, which serve to interconnect and emphasize the relationships existing within the genus *Xylocopa*. In this arrangement *Mesotrichia* Westwood embraces less than a dozen Ethiopian species typified by *Xylocopa torrida* (Westwood).

Subgenus SCHÖNHERRIA Lepeletier

Schönherria Lepeletier, 1841, Histoire naturelle des insectes, Hyménoptères, 2:207 (type *Xylocopa (Schönherria) micans* Lepeletier, 1841:208 designated by Sandhouse, 1943, Proc. U. S. Natl. Mus., 92:598).

Maa (1954:192) has incorrectly stated that Sandhouse (1943:598) designated *Apis latipes* Drury as the type species of *Schönherria* Lepeletier. Sandhouse (1943:529) did, however, designate that species as the type species of *Audinetia* Lepeletier and consequently *Audinetia* and not *Schönherria*, as he stated, is the "isogenotypic" synonym of the earlier proposed *Platynopoda* Westwood.

Since Lepeletier and Serville (1828) founded their Australian carpenter bee genus *Lestis* on specimens contained in the "...cabinet du Roi..." (p. 799) (and not on the Fabrician type of *Apis muscaria*) and moreover misidentified their specimens as constituting the sexes of *Centris muscaria* (Fabricius) [i.e. *Apis muscaria* Fabricius, 1775. = *Xylocopa muscaria* (Fabricius), *teste* Smith, 1854:364, and a recent examination of the type by Padre J. S. Moure who finds it to be a South American *Xylocopa* assignable to the subgenus *Schönherria* and is not from "Habitat in nova Hollandia" as Fabricius (1793:339) subsequently gave as the type locality], a petition has been submitted to the International Commission on Zoological Nomenclature by Dr. C. D. Michener and the author requesting that the name *Lestis* be preserved for the Australian bees for which Lepeletier and Serville intended to provide a generic name. It seems almost unnecessary to mention the confusion that would result if it were necessary to transfer under the Rules of Zoological Nomenclature the name *Lestis* from these

Australian carpenter bees and apply it to the American carpenter bees belonging to the subgenus *Schönherria* Lepeletier.

At this writing no less than 25 names are involved in homonymic conflicts. All except three of the combinations are the result of primary homonymy involving members zoologically assignable to the genus *Xylocopa*. The exceptions are cases of secondary coexistent homonymy which have been occasioned by reasons of change in zoological generic assignment. Fortunately the preponderance of names applied in the genus *Xylocopa* has provided a sufficient number of available synonyms which serve to replace many of these. For some strange reason both Friese and Vachal (see below) appear to have proposed anew names previously so proposed by them. Indeed, it appears that most, if not all, of these double proposals are absolute synonyms as well as homonyms of the earlier names in question. It must be recognized, however, that since differing type locality statements are offered by these authors for each of their conflicting homonymic pairs an element of doubt exists concerning the synonymical equivalency of the names involved. Final solution of this problem must rest with an examination of the types concerned.

The following listing presents a summary of the homonymic conflicts known to exist in the genus *Xylocopa*. Those names which are now regarded as established synonyms or renamed homonyms are italicized. Superimposed on the list of names are the pertinent bibliographic references together with a statement of the type locality as given by its author, and in the case of synonyms or renamed homonyms an indication of its current taxonomic status.

HOMONYMIC COMBINATIONS IN THE GENUS XYLOCOPA LATREILLE

albohirta Friese, 1911:687 ("1 ♀ vom südlichen Kongogebiet").

albohirta Friese, 1922:7 ("♀ von Katanga (Kongo), Westafrika"), ? = albohirta Friese, 1911:687.

caerulea (Fabricius), 1804:345 ("Habitat in nova Caledonia", ♀), locality erroneous, *teste* Cockerell, 1911:178.

caerulea Illiger, 1806:150 ("3. *Xylocopa caerulea* Nob. Brasilien. Sie ist um die Hälfte kleiner als *Violacea*, schmaler und unterscheidet sich von ihr durch einen Leib."), ? = lucida Smith, 1874:290; *nec.* "s. descr." as stated by Dalla Torre, 1896:207.

capensis Spinola. 1838:519 ("Cap de Bonne–Esperance", ♂).

capensis Lepeletier, 1841:179 ("Cap de Bonne Esperance", ♂♀), = capitata Smith, 1854:348. *New synonymy.*

capensis Enderlein, 1903:56 ("Capland, 4♀. Port Natal, 1♀"), renamed enderleini Schulz, 1906:251.

dimidiata Latreille, 1809:95 ([South America, ♀]).

dimidiata Lepeletier, 1841:199 ("Ile de Timor", ♀), = ocularis Pérez, 1901:62, *ante* p. 137.

eximia Pérez, 1901:87 ("Bolivie", ♀).

eximia Friese, 1908:569 ("von Ikutha, 1000 m, Brit. Ostafrika", ♀), renamed isabelleae Hurd, *ante* p. 136.

fasciata Lepeletier, 1841:202 ("Du Brésil", ♂), = frontalis (Olivier), 1789:64, *teste* Smith, 1874:284.

fasciata Eversmann, 1854:198 ("Vorkommen: die südlichen Kirgisensteppen"), renamed zonata Alfken, 1930:78, recently assigned to the genus *Proxylocopa*, *teste* Maa, 1954:194.

femorata Fabricius, 1804:339 ("Habitat in Algier", ♂), = violacea (Linnaeus), 1758:578, *teste* Maa, 1954:217; Dalla Torre & Friese, 1894: 56; Friese, 1901:202, *et al.*

femorata Smith, 1874:262 ("*Hab.*–Algeria", ♂), *nomen novum pro grisescens* Smith, 1854:347, *nom. praeocc.*, *nec* grisescens Lepeletier, 1841:178, renamed *commixta* Dalla Torre and Friese, 1894:56, = *cirtana* Lucas, 1846:167, *teste* Friese, 1901:218, = amedaei Lepeletier, 1841:188, *teste* Vachal, 1899:109.

frontalis (Olivier), 1789:64 ("Elle se trouve à Cayenne", ♀).

frontalis Reiche and Fairmaire, 1847:455 ("[Abyssinie]", ♂♀), renamed carinata Smith, 1874:265.

fulvopilosa Friese, 1909:230 ("Kamerun, Togo", ♂♀).

fulvopilosa Friese, 1922:7 ("♂ ♀ von Kamerun, ♀ Bipindi"), ? = fulvopilosa Friese, 1909:230.

grisescens Lepeletier, 1841:178 ("Patrie inconnue", ♀, = "*Hab.*–Brazil"), *teste* Smith, 1874:286.

grisescens Smith, 1854:347 ("Hab. Algeria", ♂), renamed *femorata* Smith, 1874:262, *nom. praeocc.*, *nec* Lepeletier, 1841:178, renamed *commixta* Dalla Torre and Friese, 1894:56, = *cirtana* Lucas, 1846:167, *teste* Friese, 1901:218, = amedaei Lepeletier, 1841:188, *teste* Vachal, 1899:109.

namaquaensis Friese, 1911:687 ("2♂ von Ookiep (Kl. Namaland)").

namaquaensis Friese, 1922:7 ("♂ von O'okiep (Kl. Namaland), Willowmore, Südafrika"), ? = namaquaensis Friese, 1911:687.

nigrescens Friese, 1901:227 ("Borneo", ♀).

nigrescens Friese, 1910:410 ("♂ [Formosa]"), = sauteri Friese, 1910: 409, *teste* Yu, 1954:2.

nigrescens Maidl, 1912:283 (" . . . 2♂, das eine aus Mikindani [herewith selected as the holotype], das andere aus W.–Usambara, [both localities in east Africa]"), renamed nigrella Hurd, *ante* p. 136.

nigriceps Friese, 1903:207 ("1♀ von Sierra Leone").

nigriceps Friese, 1922:8 ("♀ von Sierra Leone [herewith selected as the holotype] von der Elfenbeinküste und auch von Usambara, also westafrika und Ostafrika"), = nigriceps Friese, 1903:207, *teste*

Hedicke, 1923:431.

nigriceps Friese, 1922:9 ("♀ von Dibongo in Südkamerun, Westafrika"), renamed dibongoana Hedicke, 1923:431.

olivacea (Fabricius), 1787:300 ("Habitat in Sierra Leon, Africae", ♂), = caffra (Linnaeus), 1767:959, *teste* LeVeque, 1928:3.

olivacea Spinola, 1838:519 ("Indes–Orientales et Java", ♂), ? = confusa Pérez, 1901:39, 57, *teste* Maa, 1938:313.

penicillata Maidl, 1912:308 ("1♂ aus Annam (Phoc Son)"), = phalothorax Lepeletier, 1841:194, *teste* Maa, 1940:131.

penicillata Enderlein, 1913:169 ("Columbien, 1♂"), renamed maidli Maa, 1940:132.

quadrimaculata Meunier, 1892:64 ("Quito, Capture à 2000 meters de hauteur", ♂).

4–[*i.e. quadri–*] *maculata* Friese, 1916:328 ("♂ ♀ von Mexiko (Jacubaya) [=Tacubaya!, D. F. México; ♂ selected as the holotype], ♀ von America centr. (Chiriqui)"), = azteca Cresson, 1878:228. *New synonymy*

rejecta Vachal, 1910:320 ("Vu quatre ♀ et deux ♂ de l'Afrique orientale anglaise (Nairobi, Escarpment)").

rejecta Vachal, 1922:987 ("Afrique Orientale Anglaise.–Naivasha; Nairobi et Escarpment, 4♀; Escarpment aout, 2♂"), ? = rejecta Vachal, 1910:320.

rufotegularis Cockerell, 1947:144 (" . . . Feira, N. Rhodesia . . .", ♂).

rufotegularis Michener, 1954:157 ("*Canal Zone:* Culebra–Arraiján trail", ♀ [type], ♂) = ecuadorica Cockerell, 1909:403. *New synonymy*

senex Friese, 1909:242 ("Tanganjika–See, Madagaskar", ♀).

senex Friese, 1922:8 ("3♀ vom Tanganyikasee und 1♀ von Tamatave (im Dezember), Madagaskar" ♂?!), ? = senex Friese, 1909:242.

serripes Burmeister, 1876:156 (" . . . bei Rio Janeiro (Laranjeiras, im Garten meines Freundes Lallemant) fing . . .", ♂♀).

serripes Hedicke, 1938:189 ("1♀ (Holotypus) Iran: Bushire"), renamed hedickei Maa, 1940:131, = fenestrata (Fabricius), 1798:273, *teste* Maa, 1954:221.

virescens Lepeletier, 1841:186 ("De Cayenne", ♀).

virescens Gistel, 1857:29 ("Italien" ♀), renamed virescentis Strand, 1917:98.

viridis Smith, 1854:360 ("Hab. Brazil (Rio Tapajos)" ♂).

viridis Meade–Waldo, 1916:465 ("Sarawak: Kuching", ♀), renamed meade–waldoi Hurd, *ante* p. 136.

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A NEW NAME PROPOSED IN THE GENUS THEREVA

(Diptera: Therevidae)

In my revision of the Therevidae (1923)[1], I proposed in the genus *Thereva* the name *pygmaea* for a small, hairy-faced therevid fly found in the mountains of southern California. It is one of a curious little group of related species, along with *melanoneura* Loew, *anomala* Adams and *xanthobasis* James.

Paul H. Arnaud, Jr., has called my attention to an older use of the name *Thereva pygmaea* in what is now the family Tachinidae. *Thereva* is an ancient name and was first used, like *Bibio* and *Musca*, in a very broad sense. *Thereva pygmaea* Fallén is the genotype of *Catharosia* Rondani (1820. Dipt. Suec. Rhiz., 4).

I propose the name *nana* for this little therevid fly, described as *T. pygmaea* (pages 89–90).—FRANK R. COLE, *University of California, Berkeley.*

[1] Cole, F. R., 1923. A Revision of the Therevidae. Proc. U.S. Nat. Mus. 62:1-140.

A NEW GENUS OF NORTH AMERICAN FRUIT FLIES

(Diptera: Tephritidae)

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Quisenberry's (1950) revision of the tephritid genus *Euaresta* characterizes the North American species as having, in addition to other features, swollen male fore femora, two pairs of lower frontoorbitals, dorsocentrals closer to the suture than to a transverse line between the supraalars, two pairs of scutellars, and a paired set of striations near the anal region of the claspers of the external male genitalia. The holotypes of three Coquillett species —*Trypeta (Euaresta) californica* (1894), *Euaresta munda* (1899), and *Euaresta mundula* (1899)—agree in all but the last two of these characters, and but for them probably should be placed in *Euaresta*. However, further study of this Coquillett material and of additional specimens from Colorado, Idaho, and California has brought to light other differences from *Euaresta* which justify the proposal of a new genus.

Valentibulla[2] Foote and Blanc, new genus

Type species: *Trypeta (Euaresta) californica* Coquillett, 1894.

Generic characters.—Anterior oral margin not produced beyond flat whitish-pollinose face; proboscis not geniculate; two pairs of upper frontoorbitals. Humerals and supraalars present; no presutural dorsocentrals; one pair postsutural dorsocentrals, situated closer to suture than to transverse line between the supraalars; one pair well developed scutellars; head and mesonotum with abundant, stout, white to yellowish-white setae. Abdomen, including external male genitalia and ovipositor sheath, dark brown to black, highly polished; male without *Euaresta*-like grooves near the anal region of external claspers; the proximal two-thirds or three-fourths of ovipositor sheath of female distinctly swollen in contrast to the rather suddenly narrowed distal third or fourth. Fore femora of male swollen to at least 1.5 times the diameter of mid and hind femora. Wing as in figs. 4, 5, and 6, with hyaline spots in a dark brown disc; a distinct, large bulla present in cell R_5; vein R_{4+5} sinuate distad of the m-cu crossvein and curved forward at its termination in the costal margin; middle marginal hyaline spot in cell R_1 usually extending across vein R_{2+3} into cell R_3.

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[1] Assistance in this study was obtained from the University of California at Riverside, the California Academy of Sciences, Stanford University, and the Museum of Comparative Zoology, Harvard University.

[2] *Valentibulla*: from the Latin *valentis*, meaning strong, referring to the prominent bulla in cell R_5. The name was originally proposed by Quisenberry in an unpublished manuscript.

The most characteristic features of this genus are the flat or rather tumid white-pollinose face, which terminates anteriorly without any anterior production of the oral margin (figs. 1, 2, and 3); the highly polished, dark brown to black abdomen, exterior male genitalia and ovipositor sheath, the prominent bulla; and in most specimens the extension of at least the middle marginal hyaline spot in cell R_1 across vein R_{2+3} into cell R_3.

The genus is closely related to *Euaresta*, from which it may be separated by the absence of striations near the anal region of the male claspers, by the presence of only one pair of scutellar bristles, and by the terminally curved vein R_{4+5}. Adults of this genus, especially those of *thurmanae* Foote, superficially resemble those of *Aciurina* Curran, but the presence of a large, prominent bulla in cell R_5 leaves no doubt about their proper affinities.

Key to the North American Species of the Genus Valentibulla

1—Dark areas in cells 2nd M_2 and Cu_1 wider than the hyaline marks in those cells.....*thurmanae* Foote, new species
—Dark areas in cells 2nd M_2 and Cu_1 narrower than the hyaline marks in those cells..... 2

2—All pleural sclerites and at least the posterior half of disc of mesonotum shining dark brown; hyaline spot at margin of cell R_5 occupying about one-third of that cell.....*munda* (Coquillett)
—All pleural sclerites and entire disc of mesonotum heavily gray pollinose; hyaline spot at margin of cell R_5 occupying not more than one-fourth of that cell.....*californica* (Coquillett)

Valentibulla californica (Coquillett), new combination

(Figs. 2, 5)

Trypeta (Euaresta) californica Coquillett, 1894, Canad. Ent. 26:73 (♀, type loc., "Southern California"); Quisenberry, 1950, Jour. New York Ent. Soc. 58:10 (excludes from *Euaresta*).

Euaresta californica, Aldrich, 1905, Smiths. Inst. Misc. Coll. 46(1444):613 (repeats Coquillett data).

Euaresta mundula Coquillett, 1899, Jour. New York Ent. Soc. 7:265 (♂, type loc., Pareah, Utah); Aldrich, 1905, Smiths. Inst. Misc. Coll. 46(1444):613 (repeats Coquillett data); Quisenberry, 1950, Jour. New York Ent. Soc. 58:10 (excludes from *Euaresta*). (New Synonymy).

Head (Fig. 2).—Front white to yellow, wider at vertex than width of one eye, closely set with short, stout, white bristles; two pairs lower frontoorbitals, two pairs upper frontoorbitals; face white pollinose, flat from lateral view, the oral margin not at all projecting; cheek 0.15 to 0.25 times eye height; antenna 0.5 to 0.6 times as long as face. *Thorax*.—Mesonotum densely gray pollinose, closely set with short, stout, white to yellowish-white bristles; scutellum gray pollinose on proximal third, half or two-thirds,

the remaining parts yellow, in some cases the gray covering so much of dorsal surface that the yellow is seen only from a direct posterior view; mesopleuron gray and yellow, the gray extending from ventral half to almost the entire sclerite; the yellow, when present, appearing principally on dorsal and posterior margins without a sharp line of demarcation; sternopleuron definitely dark gray pollinose in all cases. *Legs.*—Usually entirely yellow, occasionally with a narrow dark brown streak ventrally on proximal half of hind femur; all tarsomeres entirely yellow. *Wing* (Fig. 5).—Dark reddish brown except for hyaline spots as follows: three in costal cell; subcostal cell often entirely dark, more commonly with at least the suggestion of a hyaline spot at base, sometimes this spot very large and filling basal third of cell; cell R_1 with three spots extending from the costa to vein R_{2+3}, rarely the third spot in the row extremely small to absent; cell R_3 usually with a continuation of the middle hyaline spot over vein R_{2+3}, rarely with a small, round spot below the distal spot in cell R_5; two spots in cell R_3 between the terminations of veins R_{2+3} and R_{4+5}, the distal one crossing vein R_{4+5}; a large spot in the distal end of cell R_5; three spots in second cell M_2, the distal one crossing vein M_{1+2} into cell R_5; a very large, distinct bulla in cell R_5; a large spot near center of cell R located directly posterior to subcostal cell but absent in one specimen; a large spot near distal end of first cell M_2 halfway between crossveins r-m and m-cu; three large spots in the distal two-thirds of cell Cu_1, the proximal one often crossing over vein Cu_2 + 2nd A and fusing with distal light spot in second anal cell, leaving a brown spot at the termination of that vein in the wing margin, occasionally these spots separated by a dark area of varying width along the vein; two to four light spots in second anal cell, varying from small and well separated to quite large and narrowly separated, or one or more obviously fused. *Abdomen.*—Shining dark brown to black. External male terminalia as in generic description. Female ovipositor sheath shining, constricted on apical third, about as long as the two preceding abdominal tergites.

Specimens examined.—Holotype female, *Trypeta (Euaresta) californica* Coquillett, with the following labels: "Los Angeles Co., Cal.", "May", "Coquillett collector", "Type No. 309, USNM", and "Trypeta californica Coq., type". Holotype male, *Euaresta mundula* Coquillett, with the following labels: "2426", "Type No. 4408, USNM", Pareah, Utah". CALIFORNIA: Kern Co.: 3♂♂, 3♀♀, Frazier Pk., 1♂, 2♀♀, Rosamond, 3♂♂, 1♀ Tehachapi (all IV.25.56, *Chrysothamnus nauseosum,* F. L. Blanc); 1♀ Cuyama Valley, IV.8.32, E. P. Van Duzee; Los Angeles Co.: 2♂♂, 2♀♀, Gorman, IV.25.56, *Chrysothamnus nauseosum,* F. L. Blanc; Mono Co.: Mammoth, IV.12.49, *Chrysothamnus* gall, D. D. Pierce; San Bernardino Co.: 1♂, 2♀♀, Barton Flats, San Bernardino Mts., VI.14.54, *Chrysothamnus nauseosum,* Timberlake; 1♂, 2♀♀, Oro Grande Wash, 4 mi. S. Adelanto, V.9.49, *Chrysothamnus nauseosum,* Timberlake; 1♀, Seven Oaks, VI.12.36, W. C. Reeves; 1♀, Seven Oaks, VI.14.50, Timberlake; Siskiyou Co.: 2♂♂, 1♀, Montague, V.20.36, *Artemisia* sp., Jones & Fosan; County unknown: 1♂, 2♀♀, Horsethief Cr., IV.21.35, *Salix* sp., C. E. Norland.

NEVADA: 2 ♂ ♀. Kyle Canyon, Charleston Mts, 7200'. Clarke Co., VI.4.41. *Chrysothamnus nauseosum*, Timberlake.

The variation found in the rather extensive California series completely closes the gap between the Coquillett types of *californica* and *mundula*, leaving no doubt in our minds that the two species are synonymous.

The hyaline wedge at the wing apex never occupies more than the apical fourth of cell R_5, and its lower margin is always well-separated from the apex of vein M_{1+2}, which is never noticeably curved backward apically. This character, together with the densely gray-dusted mesonotum and pleural sclerites, is consistently characteristic of *californica* in contrast to *munda* Coquillett (see discussion of that species). *V. thurmanae* Foote may be separated from both *californica* and *munda* by the widely separated hyaline spots along the posterior wing margin, the larger size, the distinctly reddish cast of the body, and the short, blunt bristles covering the front and mesonotum.

Valentibulla munda (Coquillett), new combination
(Figs. 3, 6)

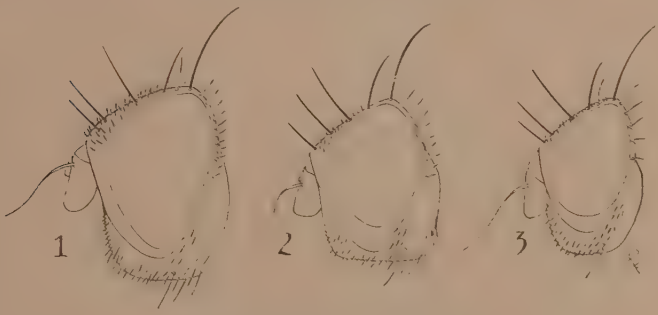
Euaresta munda Coquillett, 1899, Jour. New York Ent. Soc. 7:265 (♀, type loc. Elko, Nevada); Aldrich, 1905, Smiths. Inst. Misc. Coll. 46(1444):613 (repeats Coquillett data); Quisenberry, 1950, Jour. New York Ent. Soc. 58:10 (excludes from *Euaresta*).

Tephrella euarestoides Bates, 1935, Pan-Pac. Ent. 11:106; fig. 1, p. 105 (♀, type loc. Ridgway, Colo., 7000 ft., June 23–30, 1928; lat. view of head.) (New Synonymy).

Head (Fig. 3).—Front white to yellow, almost two times as wide as one eye at vertex, covered with short, stout, yellowish-white bristles; two or three pairs lower frontoorbitals; two pairs upper frontoorbitals; face white or yellowish-white, slightly tumid, about one-half the length of face. *Thorax*. Mesonotum with shining dark brown to nearly black ground color with an extremely light gray dusting and closely set with short, stout, yellowish-white bristles; scutellum concolorous with disc of thorax but without short bristles; mesopleuron and sternopleuron shining dark brown with a very small amount of gray dusting. *Legs*. Entirely yellow, including coxae and tarsomeres. *Wing* (Fig. 6). Dark reddish brown to brown except for hyaline spots as follows: two in costal cell; subcostal cell entirely dark or with a suggestion of a hyaline spot at base, in one or two specimens distinct and filling basal fourth of cell; cell R_1 with three spots extending from costa to vein R_{4+5}, rarely the apical spot small to absent; cell R_5 in all specimens with a continuation of the middle hyaline spot over vein R_{4+5}; two spots in margin of cell R_5, the distal one crossing vein R_{4+5}; a very large triangular spot in distal third or more of cell R_5; cell R_5 with a large, prominent bulla; three spots in 2nd cell M_3, the

distal one extending across vein M_{1+2} into cell R_5, these hyaline areas separated by infuscations distinctly narrower than the width of the hyaline areas; a large round spot near center of cell R located directly posterior to subcostal cell; a large round spot near distal end of first cell M_2 halfway between crossveins r-m and m-cu; three in distal two-thirds of cell Cu_1, the proximal one always separated from distal in cell 2nd A by a dark area extending the entire length of vein Cu_2+2nd A; two to four light spots of varying sizes in cell 2nd A, rarely fused. *Abdomen.*—Shining brown to black. External male terminalia as in generic description. Female ovipositor sheath constricted on apical third, about as long as last two abdominal tergites.

Specimens examined.—Holotype male, *Euaresta munda* Coquillett with the following labels: "Elko" and "Type No. 4407, USNM". Holotype female, *Tephrella euarestoides* Bates, with the following labels: "Ridgway, Colo., alt. 7000′, June 23–30, 1928", "Type", and "*Tephrella euarestoides* Bates, holotype". IDAHO: 3♂♂, 3♀♀, Almo, Cassia Co., VI.12–13.53, H. E. Cott; 1♀, Oreana, Owyee Co., III.16.33, from galls on *Chrysothamnus;* 5♂♂, 1♀, Wieser, Washington Co., IV.26.09.



EXPLANATION OF FIGURES

Fig. 1, Lateral view of head of *Valentibulla thurmanae* Foote: fig. 2, Same, *V. californica* (Coquillett); fig. 3, Same, *V. munda* (Coquillett).

Along the margin of the wing of *munda*, the distance between the terminations of veins R_{2+3} and R_{4+5} is only slightly greater than the distance between those of veins R_{4+5} and M_{1+2}, due in part to the fact that vein M_{1+2} bends posteriorly at its apex. The resulting space is almost completely filled by a hyaline wedge that occupies at least the apical third of cell R_5 and almost touches veins R_{4+5} and M_{1+2} at the wing margin. This character is in distinct contrast to that of *californica* Coquillett, in which the spot is much smaller (see discussion of that species). This character, together with the shining brown to black thorax, will serve to separate *munda* from the other species treated herein.

Differences from *thurmanae* Foote are treated in the discussion of that species.

Bates (1934) himself recognized the doubtful position of his *euarestoides* in *Aciurina (=Tephrella)*. But for the smaller light spots near the margin of its cell 2nd A. the holotype of *euarestoides* in the Museum of Comparative Zoology does not differ markedly from that of *munda*.

Valentibulla thurmanae Foote, new species

(Figs. 1, 4)

Head (Fig. 1).—Front distinctly yellow, almost two times the width of one eye at vertex, closely set with abundant yellowish bristles; two or three pairs lower frontoorbitals; two pairs upper frontoorbitals; face whitish-yellow pollinose, slightly tumid from lateral view; cheek 0.25 times as high as eye; antenna slightly over one-half the length of face. *Thorax.*—Mesonotum densely gray pollinose, closely set with stout, blunt bristles of a definite reddish-yellow color; scutellum with a median triangle of gray pollinosity similar to that of thorax, sides subshining, reddish; postscutellum and metathorax subshining black with reddish tinge; mesopleuron reddish pollinose; sternopleuron gray pollinose in contrast. *Legs.*—Entirely yellow, including coxae and tarsomeres. *Wing* (Fig. 4).—Reddish brown except for hyaline spots as follows: three in costal cell; subcostal cell entirely dark; three in cell R_1, the proximal two extending from costa to vein R_{2+3}, the distal spot either small and not attaining that vein or large and exceeding it; cell R_3 always with a continuation of the middle hyaline spot over vein R_{2+3} and almost always with a small round spot below the distal spot in cell R_1, sometimes these two spots fused; two marginal spots in cell R_3, the distal one crossing vein R_{4+5}; a spot in the margin of cell R_5 extending into the cell only a very short distance; cell R_5 with a large, distinct bulla; three spots in 2nd cell M_2, the distal one crossing vein M_{1+2} into cell R_5, the hyaline areas in 2nd cell M_2 separated by distances greater than their respective widths; a large round spot near center of cell R located directly posterior to tip of subcostal cell; a large round spot just distad of r-m crossvein in 1st cell M_2; three spots in distal two-thirds of cell Cu_1, the proximal one always distinct and never fusing with distal light spot in cell 2nd A, across the tip of vein Cu_2 + 2nd A; cell 2nd A mostly brown with two to four small hyaline spots as shown. *Abdomen.*—Shining brown to black. External male terminalia as in generic description. Female ovipositor sheath constricted on apical third, about 2.5 times as long as the two preceding abdominal tergites.

Holotype female, Mt. Tamalpais. Marin County. California. VI.23.18. E. P. Van Duzee (in collection of California Academy of Sciences). Paratypes: 1♀, same data as type: 1♂, 1♀ *in copulo*. Mt. View. Santa Clara County. California. "Ehrhorn Lot" (no further data); 1♀ without data of any kind.

The most obvious wing character distinguishing *thurmanae* from the two preceding species is the fact that the hyaline spots along the posterior margin are separated by distances greater than the widths of the spots themselves. Further, the light brown

EXPLANATION OF FIGURES

Fig. 4. Dorsal view of right wing of *Valentibulla thurmanae* Foote; fig. 5, Same, *V. californica* (Coquillett); fig. 6, Same, *V. munda* (Coquillett).

area in the posterior third of the wing disc of *thurmanae* contrasts markedly to the dark brown of the anterior two-thirds. Like *californica* Coquillett and unlike *munda* Coquillett, the hyaline apical spot is restricted to the apical 5th or 6th of cell R_5 and is well separated from veins R_{4+5} and M_{1+2} at the margin, but unlike both those species, is larger and redder and cell 2nd A is always more extensively infuscated. The short, stout bristles covering the front and mesonotum of *thurmanae* have a distinctly red cast in contrast to the yellow to white found in those of the other two species.

The species is named in honor of Ernestine B. Thurman.

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A NEW HOST RECORD FOR ARCHYTAS CALIFORNIAE (WALKER) IN CALIFORNIA

(Diptera: Tachinidae)

A small number of larvae of *Euchaetias oregonensis* (Stretch) (Lepidoptera: Arctiidae) (Det. H. H. Keifer) were collected on *Apocynum cannabinum* L. in the Sacramento, California vicinity by H. H. Keifer on July 7, 1950 for rearing. On August 8, 1950 a male specimen of *Archytas californiae* (Walker) emerged from one of the *Euchaetias* pupae. The larva of the *Archytas* was found to have pupated within the pupal case of its host in such a manner that its posterior spiracles were directed caudally within the pupa of the *Euchaetias*. The *Archytas* adult emerged through the anterior end of its host pupa. *Archytas californiae* appears to be generally distributed throughout the Pacific Coast states. It occurs in at least four life zones of California, since I possess specimens from localities representing the Lower Sonoran to the Canadian life zones.—Paul H. Arnaud, Jr., *California Department of Agriculture, Sacramento.*

NEW NEARCTIC TACHINIDAE[1]

(Diptera)

H. J. Reinhard

College Station, Texas

The new species described below include some interesting additions to the California muscoid fauna. I am indebted to various collectors, *viz.*, Dr. Paul D. Hurd, Jr., A. T. McClay and Paul H. Arnaud for the privilege of studying extensive lots of materials submitted over the past several years. The present report is based in part upon this material.

Viviania arrisor Reinhard, new species

Allied to *lachnosternae* Townsend, but the third antennal segment including arista and cheek grooves wholly black.

Male.—Head black in ground color with dense gray to plumbeous pollen; front at vertex 0.21 of head width, equibroad to middle thence widening rapidly into facial angle; frontalia black, a little wider than parafrontal; outer verticals vestigial, three or four frontals below antennal base and two or three suberect preverticals; ocellars long, proclinate; parafrontal with a vestiture of black hairs which extend sparsely downward almost to mid face level; facialia coarsely irregularly bristled on lower third or less, vibrissae far above oral margin; proboscis short, palpus yellow, subequal to length of haustellum; antenna rather slender, third segment slightly over twice length of second and barely reaching lower third of face; long bare arista moderately thickened near base, thence slender to tip, basal segments short: eye bare, extending below vibrissal level; cheek one-third eye-length, clothed with black hairs; occiput flat and pale-haired. *Thorax* and scutellum black, gray pollinose, mesonotum marked with four broad dark vittae in front and five behind suture: dorsocentral 3, 4; acrostichal 2 or 3, 3; presutural 2; intraalar 3; supraalar 3; sternopleural 2, 1; pteropleural 1 (small); scutellum with 4 lateral, 1 weak non-decussate apical and 1 discal pair; prosternum with bristly hairs at sides; postnotal slope setose. Legs black, mid tibia with two stoutish anterodorsal bristles, claws and pulvilli elongate. Wing gray hyaline, costal spine small; hind cross vein about its length from cubitulus; first posterior cell open considerably before wing tip; third vein with two or three setae near base; calypters semitransparent white. *Abdomen* black sometimes with a trace of red at sides, entire upper surface dusted with changeable gray pollen showing a brownish tinge in a flat rear angle; one pair of median marginals on segments one and two, a marginal row on three and four, latter also with discals above except near basal margin; genital forceps triangular in rear view with prongs contiguous to tip; accessory process fingerlike, a trifle shorter than forceps but broader than same in profile:

[1] Contribution No. 2967, Department of Entomology, Texas Agricultural Experiment Station.

penis shiny black, recurved near middle and terminating in a pale membrane which is prolonged at the posterior apical extremity.

Female.—Vertex 0.26 of head width; two pairs of proclinate orbital bristles, outer verticals short but differentiated; median marginals usually absent on first abdominal segment and anal truncate at apex; pulvilli and claws shorter than last tarsal segment.

Length, 9.5–11 mm.

Holotype male and allotype female, TOPAZ LAKE, MONO COUNTY, CALIFORNIA, June 26, 1957 (J. W. MacSwain) in the California Academy of Sciences Collection. Paratypes: one male and two females, same data as holotype.

Viviania pedita Reinhard, new species

As described for the preceding species, but differing in the following characters among others:

Male only.—Head pollen yellowish gray, cheek grooves and vibrissal angles pale or reddish in ground color; vertex 0.18 of head width; antenna shorter or about three-fifths facial length, basal segments red; arista micro pubescent, brownish; fourth abdominal segment wholly red and contrasting sharply with preceding ones; mid tibia with one submedian anterodorsal bristle. Length, 10 mm.

Holotype male, LAKE PLACID, FLORIDA, March 3, 1945 (J. G. Needham).

Phorocera regilla Reinhard, new species

A small species, which traces to *festinans* in Aldrich and Webber's key (Proc. U. S. N. M., 63:45–48), but by comparison with the type specimen differs in genital characters among others.

Male.—Head pollen gray with yellow tinge on parafrontals; latter sparsely beset with fine hairs and about equal to width of dark brown frontalia; two pre-verticals, ocellars and inner verticals about equal in size; frontals weak, three bristles below antennal base; vertex 0.25 of head width; narrow parafacial equal to facialia inverted; latter bristled to upper third or higher and usually with a secondary outer row of hairs; antenna entirely black, as long as face, third segment much broader than parafacial, six times longer than second; black, bare arista thickened on proximal two-fifths thence suddenly tapered outward to a thin or very delicate tip; cheek hardly one-sixth eye length; eye pilose; proboscis short, palpus brown to reddish apically. *Thorax* and scutellum black, lightly dusted with grayish pollen leaving rather narrow poorly defined vittae on notum. Chaetotaxy: acrostichal 2, 3; dorsocentral 3, 4; intraalar 3; supraalar 3; presutural 2; posthumeral 2; humeral 2; sternopleural 3; pteropleural 1 (small); scutellum with 3 lateral, no apical, 1 poorly differentiated discal pair. Legs black, weakly bristled; hind tibia not evenly ciliated; mid tibia with one median bristle on outer front side; claws and pulvilli exceeding length of apical tarsal segment. Wing slightly smoky becoming grayish on hind margin; third vein with two or three setulae near base;

first posterior cell open shortly before wing tip; hind cross vein oblique and its length from the broadly rounded stumpless cubitulus; costal spine small; calypters transparent tawny. *Abdomen* black, pointed apically, last three segments with pale yellowish gray pollen which extends thinly rearward to or beyond middle of each except along median line; one pair of median marginal bristles on second segment, a marginal row on the two following ones, besides a discal row on anal and a discal pair on each intermediate segment; genitalia black; forceps tapered on basal third, thence subparallel to a blunt or rounded apex, prongs divided on apical half but not divergent; accessory process longer than forceps, ovate and wide in profile but reduced to a subacute apex and concave on outer face; penis shining black basally, with intermediate anterior portion pale membranous, distal part black, compressed and beset with a vestiture of appressed whitish scales.

Female.—Vertex 0.28 (average of three) of head width; abdomen broader and usually with grayer pollen than in male; two proclinate orbitals; outer verticals differentiated; wing nearly clear; claws and pulvilli small.

Length, 3–4 mm.

Holotype male, REDWOOD CITY, SAN MATEO COUNTY, CALIFORNIA, July 27, 1952 (P. H. Arnaud) and allotype female, Mountain Home, San Bernardino County, California, September 12, 1953 (E. I. Schlinger) in the California Academy of Sciences Collection. Paratypes: 14 males, 2 females same data as holotype; 1 male and 2 females, Chiricahua Mts., Ariz., July 8, 1932 and July 4, 1940 (R. H. Beamer); 1 male and 1 female, Graham Mountains, Arizona, 6000–7000 feet, August 9, 1955 (Butler-Noon).

Phorocera ustulata Reinhard, new species

Differs from the preceding species chiefly as follows:

Male.—Parafacial seal brown, pollen becoming thinner and lusterless on parafrontal, latter blackish in most views and hardly equal width of dark brown frontalia; cheek nearly one-third eye length, dusted with gray pollen which extends over entire hind surface of head; vertex 0.33 of head width; third antennal segment subequal to parafacial width; five times length of second; arista thickened on proximal half; facialia narrower and subvertical, with a single row of bristles extending above middle; palpus red to brownish basally; eye with moderately long pale dense hairs; scutellum reddish apically and usually with a well differentiated pair of erect discals. *Abdomen* obovate, last three segments dusted with gray or yellowish gray pollen which extends thinly to hind margin of each in favorable view; one pair of median marginals on segments one and two, a marginal row on three and four besides a row of discals often irregularly spaced on last; intermediate segments with one pair of discals and a vestiture of longish hairs including some bristlelike and erect along median line; genital forceps small, shiny black, tapering gradually with prongs

contiguous to subacute apex; accessory process in profile about as thick as forceps but a trifle longer and tapering to an equally narrow apex which bears a few minute spinose hairs; basal stalk of penis quite slender, distal segment ovate, black with a pale semitransparent area along hind margin.

Female.—Vertex 0.34 (average of four) of head width; notal pollen heavier and vittae more distinct than in male; third antennal segment three and one-half to four times second; facialia bristled about to middle; abdomen broadly ovate, with moderately dense gray or yellowish gray pollen on last three segments; claws and pulvilli small.

Length, 4–6 mm.

Holotype male and allotype female, REDWOOD CITY, CALIFORNIA, February 8 and 9, 1953 (P. H. Arnaud) in Paul H. Arnaud's Collection. Paratypes: 43 males and 1 female, same data as type except in part dated February 1953, on foliage of *Quercus agrifolia*; 6 females, Kings Mountain Road, Woodside, San Mateo County, California, April 17, 1956 (P. H. Arnaud); 198 males and 86 females, Stanford University, Santa Clara County, California, February–April 1952–1958 (P. H. Arnaud); 3 males, Ithaca, N.Y., July 11 and 24, 1935 (K. V. Krombein); 1 male, Babylon, L. I., N. Y., July 13, 1933 (F. S. Blanton); 2 males and 1 female, Bear Mountain State Park, Bear Mountain, N. Y., April 28, 1936 (L. L. Pechuman); and 1 male, Greenwood Lake, N. J., May 1, 1918 (Wm. T. Davis); 1 male, Torrey, Utah, May 9, 1941 (G. F. Knowlton, F. C. Harmston).

Phorocera anassa Reinhard, new species

Aside from its larger build the present species differs from *P. regilla* Reinhard chiefly as follows:

Male.—Parafacial and parafrontal pale yellowish gray pollinose, cheek and occiput cinereous; vertex 0.27 of head width; frontalia narrower than parafrontal; latter with numerous erect black hairs extending from upper extremity to lowermost frontals near aristal level; bare parafacial about equal to width of third antennal segment, which is fully five times longer than second; arista thickened on proximal half; facialia with a single row of bristles ascending well above middle; cheek nearly one-fourth eye length; palpus brownish yellow paler before tip; scutellum reddish apically, with a pair of non-decussate apical bristles set slightly higher up and in front of hindmost lateral and one pair of erect discals far behind middle; hind cross vein a trifle less than its length from cubitulus; calypters pale yellow; last three abdominal segments with gray pollen, which extends thinly to hind margin of each, hairs on entire upper surface erect longish and somewhat bristly along median line; genital forceps slender, prongs contiguous, gradually tapered from base to tip and very thin in profile; accessory process shorter and much broader than forceps; penis entirely black, distal segment glabrous, bowed rearward and tubular in cross

section but tapering slightly towards tip.

Female.—Thorax and abdomen with much denser pollen, otherwise similar to male except for the usual sexual diffeernces.

Length, 7 mm.

Holotype male and allotype female, LAKE WAHA, IDAHO, August 8, 1941, no collector's label.

Aphantorhapha hurdi Reinhard, new species

A minute black fly, dusted with opaque cinerous pollen; legs more or less reddish; hind cross vein strongly retracted, etc.

Male.—Head pollen whitish on pale background; front nearly one-half head width, inner orbits parallel from vertex to cheeks; frontalia pale yellowish fully twice width of parafrontal, latter practically bare outside frontal row; proclinate ocellars short but distinct; two verticals and proclinate orbitals; one frontal bristle below antennal base; bare parafacial sublinear below middle; facialia bare; vibrissae short, on oral margin; antenna red basally, third segment largely blackish and about four times second; arista barely exceeding length of third antennal segment, thickened to pointed tip, basal segments elongated and each subequal one-half length of apical segment; proboscis short, palpus yellow; cheek bare, one-third eye length; back of head flat and practically bare. *Thorax* and scutellum with rather dense gray pollen, notum not vittate, transverse suture obsolete; acrostichal 2, 3; dorsocentral 2, 3; presutural 2; sternopleural 3 (lowermost hairlike); scutellum with extreme apex tinged with red, 3 lateral bristles and a non-decussate hairlike apical pair; propleuron and postnotal slope bare. Legs rather short and stoutish, bristling very weak; claws and pulvilli minute. Wing hyaline, reaching well beyond apex of abdomen; first posterior cell closed at costa a trifle before exact wing tip; last section of fifth vein three-fourths to equal length of preceding section; third vein with three or four setulae extending half way or more to small cross vein; costal spine minute; epaulet yellow; calypters opaque white. *Abdomen* black with extreme hind edge of segments one to three contrasting pale yellow in ground color, entire upper surface dusted with gray pollen, a vague median vitta generally apparent; one pair of median marginals on second segment and a marginal row on third and fourth; genital segments small and retracted.

Female.—Very similar to male; genitalia retracted within anal orifice. not adapted for piercing.

Length, 2.25–2.75 mm.

Holotype male and allotype female, SURPRISE CANYON, PANAMINT MOUNTAINS, INYO COUNTY, CALIFORNIA, April 24, 1957 (P. D. Hurd, Jr., G. I. Stage) in the California Academy of Sciences Collection. Paratypes: one pair, same data as holotype.

Homalactia facula Reinhard, new species

Differs from *H. harringtoni* (Coquillett) mainly in having the legs, abdomen and antennae mostly pale reddish in ground color.

Female only.—Head thinly gray pollinose; vertex 0.32 of head width; decussate inner and erect outer verticals nearly equal in size; ocellars small or hairlike; one proclinate and two reclinate orbitals; frontals in a single row descending almost to aristal level; frontalia pale yellow, wider than one parafrontal; entire face including cheeks pale in ground color; facialia with a few bristly hairs next to vibrissae, which are situated on level with oral margin; parafacial very narrow and bare; antenna largely reddish, third segment slightly darker on outer side beyond middle, about two and one-half times longer than second; bare arista rather short, thickened on basal three-fifths or more; proboscis short; palpi yellow; cheek nearly two-fifths eye length. *Thorax* black lightly sprinkled with grayish pollen; three post dorso-centrals and three sternopleurals; pteropleural nearly as strong as intermediate supraalar; scutellum yellowish apically, bearing three lateral bristles and a decussate apical pair. Wing subhyaline with small and hind cross veins infuscated, apex of first vein and base of third less distinctly so; first, third and fifth vein setose; first posterior cell open shortly before extreme wing tip; epaulet yellow; calypters tawny. Legs except tarsi yellow; middle tibia with two median anterolateral bristles; claws and pulvilli short; fore tarsi moderately flattened and stoutish. *Abdomen* reddish yellow basally, hind margin of intermediate segments infuscated, fourth wholly black and each gray pollinose on narrow basal edge; second segment with one pair of median marginal bristles, a marginal row on the two following ones besides a discal row on the last and one pair of discals on segments two and three.

Length, 4 mm.

Holotype female, RIVERSIDE, CALIFORNIA, July 15, 1955 (J. C. Hall), in the California Academy of Sciences Collection.

Siphonopsis conata Reinhard, new species

A small species with a reddish yellow abdomen usually infuscated along median line; male third antennal segment uncommonly large; slender labella folded back on haustellum, etc.

Male only.—Front and face wide, approximating one-half head width, dusted with grayish yellow pollen on pale ground color; uppermost prevertical small, preceding one stoutish or equal size of outer vertical; two or three frontal bristles beneath antennal base with a few minute setae extending below latter; frontalia pale reddish to yellow, nearly three times parafrontal width; antenna subequal length of face, short proximal segments red, third black, strongly widened to a subtruncate or broadly rounded apex; arista reddish, thickened on proximal two-fifths, second segment a little under one-half length of third and basal segment short; parafacial narrow; facialia with a few setae next to vibrissae which are on oral margin; haustellum slender but barely one-half head height; palpus yellow; cheek slightly under one-third eye length; eye bare. *Thorax* black, humeri, pleura and apex of scutellum more or less reddish, notum with dense gray patternless pollen, transverse suture evanescent; prosternum sparsely setose; three post dorsocentrals and sternopleurals; scutellum with three lateral,

one hairlike decussate upturned apical and one appressed discal pair. Legs yellow, tarsi black, claws and pulvilli minute. Wing clear with a yellowish tinge; costal spine vestigial; third vein setulose halfway or more to small cross vein; first posterior cell narrowly open at wing tip; hind cross vein about mid way between small cross vein and cubitulus; latter broadly rounded without fold or stump; last section of fifth vein one-third length of preceding section; epaulet yellow; calypters transparent tawny. *Abdomen* narrower than thorax, tapered toward tip; hairs on entire upper surface appressed; one pair of median marginals on second segment, a marginal row on last two; genitalia yellow, caudoventral; forceps rather short, triangular on basal half in rear view, thence compressed and very slender to apex; accessory process a trifle longer than forceps, slender beyond middle and moderately constricted before rounded apex.

Length, 4.5 mm.

Holotype male, MILL VALLEY, MARIN COUNTY, CALIFORNIA, May 30, 1926 (E. P. Van Duzee) "Ex: *Phryganidia pupae*," in the California Academy of Sciences Collection. Paratypes: seven males, same data as holotype.

A CHALKBOARD TECHNIQUE FOR MAKING ILLUSTRATIONS

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In making certain illustrations of internal acarine morphology, a chalkboard technique was developed which has proved to be highly satisfactory. This method is economical, requires simple dark room equipment, is time saving, tends to diminish small drawing errors and gives both 35 mm. slides as well as negatives for making prints.

Illustrations were drawn with white chalk on a 4 x 6 foot portable blackboard. All permanent white marks and scratches on the blackboard were covered with india ink. The drawings were made as large as the board permitted. The fingernail of the artist was used to make the rough outline on the blackboard. Illustrations were outlined with white chalk and stippled and highlighted with both white and black chalks. Freehand lettering was employed although other methods, such as precut labels, could have been substituted.

The finished drawing was photographed with a 35 mm. camera (Leica, 50 mm., 3.5) mounted on a tripod at a distance of approximately 12 feet. Camera "f" setting was 3.5, shutter speed from .25 to 1.0 second, using Kodak microfile film. The

time of exposure varied with available light. The light sources were overhead fluorescent lights supplementing daylight from a ceiling skylight.

The film was developed in Kodak microdol developer and, after washing and drying, was used to make a second film exposure on positive film. This second negative was made by pressing a small piece of positive film over the microfile negative and exposing it for .5 of a second to a 15 watt light at 10.5 inches on a contact printer. The positive film was developed in D11 developer and was used to make the finished print for publication. The final result is shown in Figure 1. Prints made from this second negative produce black lines on a white background or the reverse of the original chalkboard illustration.

Use of a light meter would simplify obtaining the correct exposure, although taking each drawing at three different exposure times (.25, .50, 1.0 second) produced at least one satisfactory negative. Opaque film paint was useful for retouching the negative.

The microfile negative can be mounted for screen projection in illustrating lectures. Series of graphs could be prepared by first painting coordinates on the board with white paint and then plotting curves in chalk. An opaque projector, such as a balopticon, will be useful for roughing-in complex figures. The use of sharpened chalk sticks permit drawing of very fine lines.

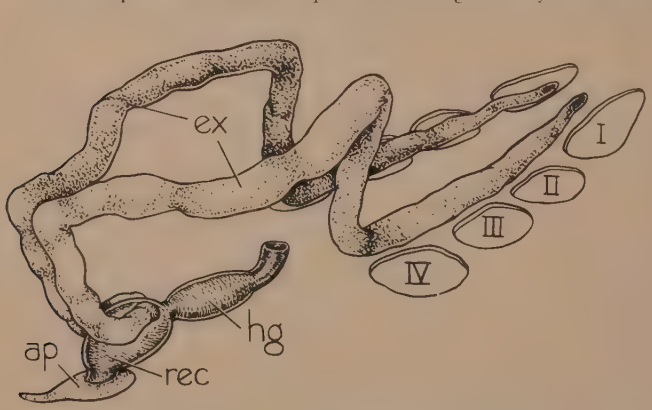

Fig. 1. The excretory tubules in a mite; a drawing prepared using the chalkboard technique.

TWO NEW NORTH AMERICAN SPECIES OF ANELAPHUS LINSLEY

(Coleoptera: Cerambycidae)

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The genus *Anelaphus* was proposed by Linsley (1936) to include certain species which had been referred to *Anoplium* or *Elaphidion*. As currently defined, the genus consists of 13 species including the two described below.

Anelaphus inflaticollis Chemsak, new species

Female. Form elongate; integument piceous to rufo-piceous; pubescence yellowish or tawny. *Head* coarsely punctate with a slightly raised impunctate area between eyes, a longitudinal sulcus extending the length of face from impunctate area on vertex to clypeus; pubescence yellowish, appressed, occurring in patches on vertex, antennal tubercles, and front; antennae shorter than body, segments three to five spined at apices, segments four to eleven excavated, obtusely carinate above, third segment subequal to scape in length, fourth shortest, fifth to seventh subequal, shorter than third, eighth to tenth gradually decreasing in length, tenth subequal to fourth, eleventh subequal to fifth. *Pronotum* inflated, sides broadly rounded, equal to elytra in width; pubescence dense, pale, rather fine and appressed, nearly obscuring surface; punctures dense, rather fine; disk with a long, narrow, glabrous, slightly raised vitta reaching almost to apex of pronotum, basally joined by two punctuate arcuate vittae on either side, assuming a W-shape, prosternum not impressed in front of coxae, coarsely, contiguously punctured, finely, moderately pubescent, anterior edge glabrous, transversley, irregularly wrinkled, meso- and metasternum finely punctate with occasional coarse punctures interspersed, finely pubescent, more densely at sides; episternum of metathorax very sparsely, coarsely punctate. *Elytra* about 2.7 times longer than broad; surface sparsely, coarsely, punctate, much more shallowly toward apices, punctures widely separated; pubescence rather densely irrorate with depressed whitish hairs, suberect hairs about same length as depressed; apices subtruncate, sutural angle not dentiform. *Legs* rather short, femora moderately coarsely, shallowly punctate, moderately pubescent. *Abdomen* finely punctate, moderately pubescent; fifth sternite broadly rounded, very slightly emarginate at apex. Length 13 mm.

Holotype female: APPLE VALLEY, SAN BERNARDINO COUNTY, CALIFORNIA, May 24, 1955 (D. F. Hardwick), in the Canadian National Collection, Ottawa, Ontario.

This species is allied to *A. brevidens* (Schaeffer) from which it may be readily differentiated by the inflated appearance of

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[1] The writer is indebted to Henry F. Howden and E. G. Linsley for the opportunity of describing these species, and to the latter also for the use of his manuscript key to the species of *Anelaphus*.

the pronotum, the finer pronotal punctation, and the less dense elytral punctation.

Anelaphus antennatus Chemsak, new species

Male. Form elongate, robust; integument light reddish brown; pubescence sparse, pale; antennae twelve segmented. *Head* finely, confluently punctured on vertex, coarsely, confluently between eyes, a narrow ill-defined linear smooth area between eyes joining with frontal sulcus; pubescence sparse, fine, suberect, small tufts of depressed yellowish hairs on antennal tubercles and on vertex; antennae longer than the body, twelve segmented, segments three to eight spined at apices, spines decreasing in length from the third, segments beginning with fourth excavated dorsally, obtusely carinate; scape longer than the third segment, fourth shorter than third, fifth to ninth subequal to scape, tenth and eleventh shorter than scape but longer than third, twelfth shortest except for second; antennal punctation fine, dense, pubescence fine and moderate. *Pronotum* wider than long, broadly rounded at sides, pubescence short, suberect, denser at sides, basal margin with small linear patch of depressed hairs at middle; punctures moderate, confluent, middle of disk with small glabrous callus; prosternum scarcely impressed in front of coxae, moderately, densely, confluently punctate except for anterior band which is shining and transversely wrinkled, pubescence short, sparse; meso- and metasternum sparsely, moderately punctate, moderately, finely pubescent. *Elytra* about 2.7 times longer than broad; surface rather finely, moderately, separately punctured, punctures becoming shallow apically; pubescence sparse, short, suberect, with small patches of whitish hairs scattered over surface; apices obliquely truncate, sutural angles slightly dentiform. *Legs* long, robust, finely, densely punctate, moderately densely pubescent. *Abdomen* finely, sparsely punctate, finely pubescent; fifth sternite broadly truncate. Length, 18 mm.

Holotype male: Fort Davis, Jeff Davis County, Texas, August 1-15, 1927, deposited in the California Academy of Sciences, San Francisco.

This species exhibits some affinity with *A. subinermis* Linsley and *A. inermis* (Newman). It differs from these by having 12 segmented antennae, at least in the male, and spines at the apices of six antennal segments. The first character will also separate *antennatus* from all of the other described species in the genus.

The holotype has three segments missing from one of the antennae and is also a little rubbed. However, the appressed patches of white hairs on the elytra are evident, and fresher specimens should reveal the extent of the pubescence.

Literature Cited

Linsley, E. G.

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ANOPLODERA LAETIFICA (LECONTE) AND ERGATES SPICULATUS LECONTE FROM KNOB-CONE PINE

(Coleoptera: Cerambycidae)

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During May, 1958, the senior author found *Anoplodera laetifica* (LeConte) in knob-cone pine (*Pinus attenuata* Lemmon) in considerable numbers in a 1955 burn south of Ben Lomond in the Santa Cruz Mountains. The exact area is southerly from Ben Lomond, on the east side of the San Lorenzo Valley, and almost half way between Glen Arbor Road and the top of the hill on the right side of Quail Hollow Road. The slope is north-westerly. The only species of pine that was studied was knob-cone pine, although other pines occur at some little distance away.

All of the pines in the immediate area were killed by the fire. The tops of the dead pines have fallen over and stumps from eighteen inches to about three feet high remain. These stumps range from eight to twelve inches in diameter. From these stumps twenty adults of *Anoplodera laetifica* were collected.

The males among these specimens showed the usual dimorphism characteristic of this species. Several were all black, one was black with small red humeral markings, and others were reddish or dull brownish with various degrees of black marks. The females were the normal red with black spots.

All adults were cut from solid, relatively dry wood, and within two feet of the ground. Many larvae and pupae were also found at the same time. The larval tunnels are concentrated in the deeper parts of the wood, at a depth of more than one or two inches, and seem to run generally in a longitudinal pattern to the tree (that is, with the grain). Mature larvae turn toward the periphery of the tree and make pupal cells facing the outside, within a half inch of the surface and at right angles to the larval tunnels.

In spite of the abundance of *Anoplodera laetifica*, little has been noted concerning its food preferences and habits. The present observations indicate that it utilizes wood of dead pines and that knob-cone pine is suitable to its needs. The occurrence of *A. laetifica* in many localities where knob-cone pine does not occur, indicates that other trees also may be utilized. The junior author

suggests that since *A. laetifica* is a common species, it may be useful in reducing stumps.

Larvae of *Ergates spiculatus* LeConte were common in the downed tops of the pines as they lay on the ground, but were absent, or nearly so, from the standing stumps. The *Ergates* larvae were somewhat less than two inches in length and appeared to lack at least a year of being mature. If this estimate is correct, it suggests a lag of about four years between destruction of trees by fire, and the emergence of *Ergates* from the killed trees.

A NEW ENTOMOLOGICAL JOURNAL

When circumstances forced Father T. Borgmeier to cease publication of his outstanding "Revista de Entomologia" with Volume 22 in 1951, he and the publishers, Editôra Vozes, did manage to issue a new occasional series under the title "Studia Entomologica." Three numbers appeared (1952, 1953, 1955) totaling 801 pages. Now, with the help of Brazil's National Research Council, this has become a formal journal: "Studia Entomologica. Revista Internacional de Entomologia." Under the direction of Thomaz Borgmeier, O.F.M., and Walter W. Kempf, O.F.M., Volume 1, *new series*, was published in 1958 (fasc. 1–2, January 31; 304 pp.; fasc. 3–4, November 29; 278 pp.). It will continue to appear twice a year, in double fascicles of approximately 250 pages each.

The Revista's worthy successor, very similar in format, will publish articles in Latin, Portuguese, Spanish, Italian, French, English and German. Papers may be on the biology and systematics of insects in general, but emphasis is naturally on the Neotropical fauna. There is a section for short notes, including quotations of significant paragraphs from articles in other journals, and one on bibliography. Volume 1 *(n.s.)* fasc. 1–2 has two articles on Coleoptera (T. Borgmeier; A. Reichensperger), four on Diptera (D. Albuquerque; C. Colyer; J. Lane; H. Schmitz), one on Embioptera (D. Lacombe), four on Hymenoptera (T. Borgmeier; W. L. Brown; W. Glöckner; W. Kempf); fasc. 3–4 has two on Coleoptera (A. Martinez; R. Barth), six on Diptera (T. Borgmeier; M. Carrera and K. Lenko; F. Hull; J. Lane and C. d'Andretta; J. Lane and N. Cerqueira; H. Lopes), three on Hymenoptera (W. Glöckner; W. Kempf), one on Orthoptera (S. Toledo Piza) and one on Strepsiptera (M. Kogan). There are many illustrations.

"Studia Entomologica" *(n.s.)* is not available on exchange, but is for sale at $6.00 post free from the manager, T. Borgmeier, Estrada Rio Grande 2116, Rio de Janeiro (Jacarepaguá), D. F., Brasil. Checks must be made out in the name of Editôra Vozes Ltda. We wish "Studia Entomologia" every success, and as Father Borgmeier wrote in his tribute to Dr. Hermann Schmitz: *Ad multos annos!*—HUGH B. LEECH, *California Academy of Sciences, San Francisco.*